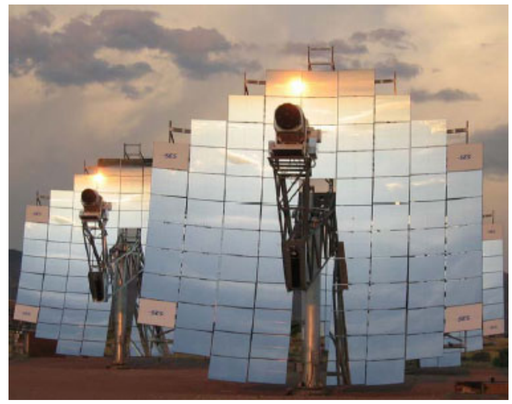
Appendix N
Initial Drainage Report

Initial Drainage Report
Solar One LLC
San Bernardino, California

Project No. 200002430



Stantec

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EXECUTIVE SUMMARY

This report documents the initial hydrologic analysis of the Stirling Energy Systems, Solar One Project. The goals of this study are to:

1. evaluate the storm runoff that impacts the site
2. identify the locations on the proposed site which would be inundated by floodwater from a 100-year storm
3. estimate the approximate depth of flooding which could be expected

The study is not intended to provide a detailed floodplain analysis or to provide all the data necessary for design. It is intended, however, that the results provide sufficient information to support initial site layout and final design efforts.

Findings and Recommendations

1. Portions of the site are subject to active and / or inactive alluvial fan flooding hazards. However, due to the relatively low rates of precipitation observed in the area, the overall risk due to flooding is low.

2. To control flood impacts, consideration should be given to the siting of buildings and other infrastructure outside of defined washes and minimizing surface disturbing activities.

3. Some areas within the site exhibit a lack of well defined drainage channels. Site grading to provide adequate channels and drains to convey the storm water away from the roads, buildings and other improvements may be useful to control shallow sheet flows in these areas.

4. Site soils are erodible and storm runoff may cause erosion and deposition of sediment. Grading plan design and details should focus on preventing erosion and managing the sediment on the site to reduce the amount of maintenance that may be required. This may require erosion protection measures such as riprap and sediment control by constructing sediment basins. Stabilization of roads, parking areas and building sites may also be done by paving or applying soil binder to the surface which will reduce dust and erosion.

5. Arizona Crossings (roadway dips) or low flow culverts consisting of a small diameter storm drain with a perforated stem pipe should be placed on roadways as needed to facilitate crossing the minor and major channels / swales during rain storms.

6. Building sites should be developed per San Bernardino County drainage criteria. They should provide storm water retention basins to mitigate any increase in storm water runoff.

7. Care should be taken when siting ground mounted solar generating equipment (such as transformers) on the site to avoid existing wash areas.

8. Hector Road at the crossing of the railroad tracks is impacted by 100-year flows on both the north and south side of the tracks. These flows should be channelized through the proposed bridge if possible.

1.0 INTRODUCTION

1.1 General

This drainage report is prepared for Stirling Energy Systems (SES), Inc as part of the Application for Certification (AFC) to the California Energy Commission (CEC) for the Solar One Project. The project includes construction of a solar thermal electric generating facility about 34 miles east of Barstow, California, north of Interstate 40. Electrical power will be supplied to Southern California Edison (SCE). The first phase of the project will generate 500 MW and the second phase of the project includes the expansion of the solar field to develop another 350MW of power for a total of 850MW.

The energy is generated by solar generating equipment consisting of parabolic dish mirrors, which focus solar heat energy on a Stirling engine, which powers a generator. This assembly is referred to as a SunCatcher™. Approximately twenty thousand SunCatchers will be constructed on the Phase 1 project to generate the 500MW and fourteen thousand additional SunCatchers constructed in Phase 2 to generate the remaining 350MW.

The purpose of this study is to conduct a surface water investigation of the Solar One project site and to evaluate potential issues related to storm water runoff. The goals of this study are to:

- evaluate the 25- and 100-year storm runoff which impacts the site
- identify the locations on the proposed site which would be inundated during the 100-year storm
- estimate the approximate depth of flooding which could be expected during the 100-year storm

The study is not intended to provide a detailed floodplain analysis or to provide all the data necessary for design. It is intended to provide sufficient information to adequately evaluate the feasibility of the site for development of the project.

1.2 Existing Data and Reports

The following data were obtained and reviewed for the analysis of the site hydrology.

USGS Maps

United States Geologic Survey (USGS) 7 ½ minute quadrangle maps of the area were obtained for the area including Ash Hill, Broadwell Lake, Hector, Hidden Valley West, Lavic Lake, Ludlow, Silver Bell Mine, Sleeping Beauty, Sunshine Peak, and Troy. These maps were obtained to provide topographic information necessary to define the watershed which contributes runoff to the project site. The maps were obtained in digital format and provide the base for the watershed map.

Aerial Photos

Lower resolution, non orthorectified aerial photos of the project site and surrounding area were obtained and used to help delineate the watershed boundary and flow paths.

Mapping

Aerial topography with 1 foot contours was acquired for a small portion of the site for the pilot project site in 2006. Additional aerial survey data is currently being acquired, however it was not yet available for use in this analysis.

Hydrology

Hydrology methodology and data are defined in the San Bernardino County Hydrology Manual[1].

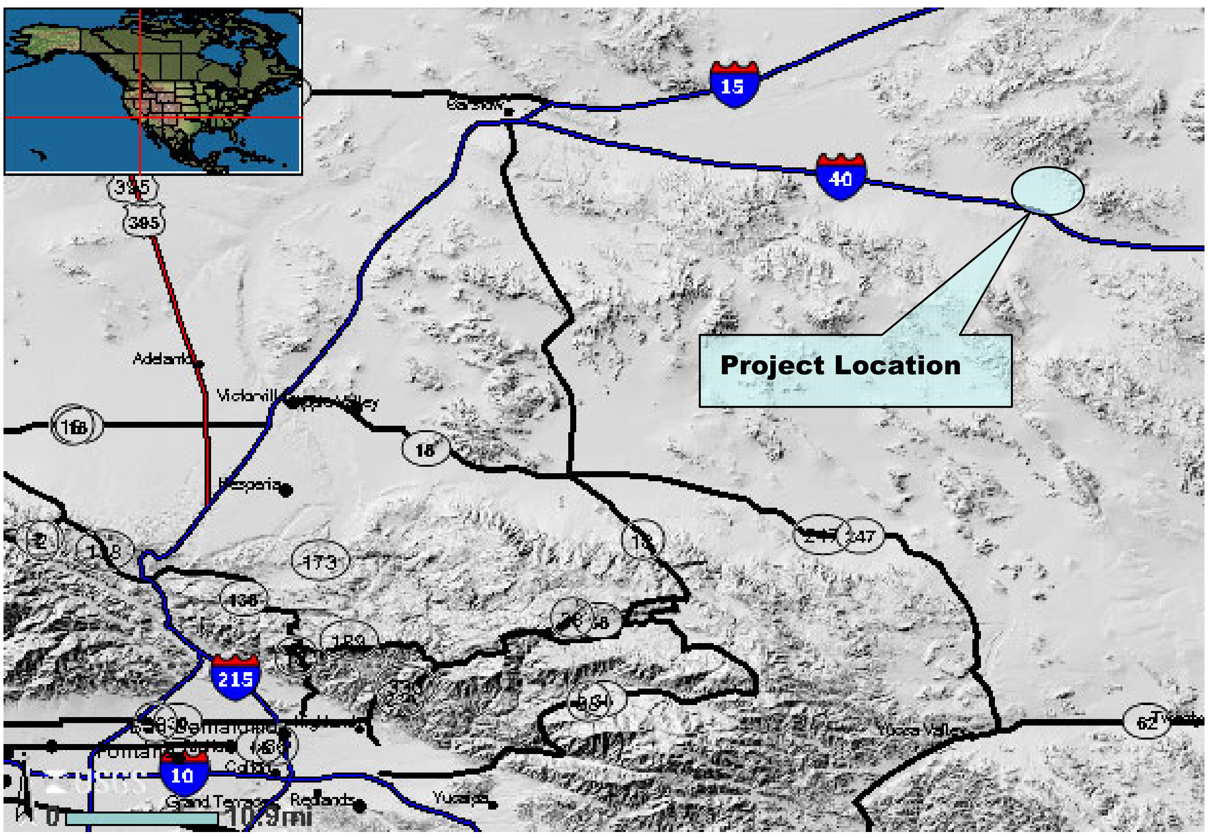
[1] Revised County of San Bernardino Hydrology Manual (1986), Williamson and Schmid, Civil Engineers

2.0 LOCATION

2.1 General Location

The project is located in San Bernardino County in southern California about 37 miles east of Barstow, California, just north of Interstate 40. (straight-line distances taken from Pisgah Substation). Additionally, it is located approximately 115 miles east of Los Angeles, 17 miles east of Newberry Springs, 30 miles east of Daggett, 38 miles south west of Baker, 57 miles north east of Victorville and 13 miles west of Ludlow. See Figure 2.1-1, Location Map.

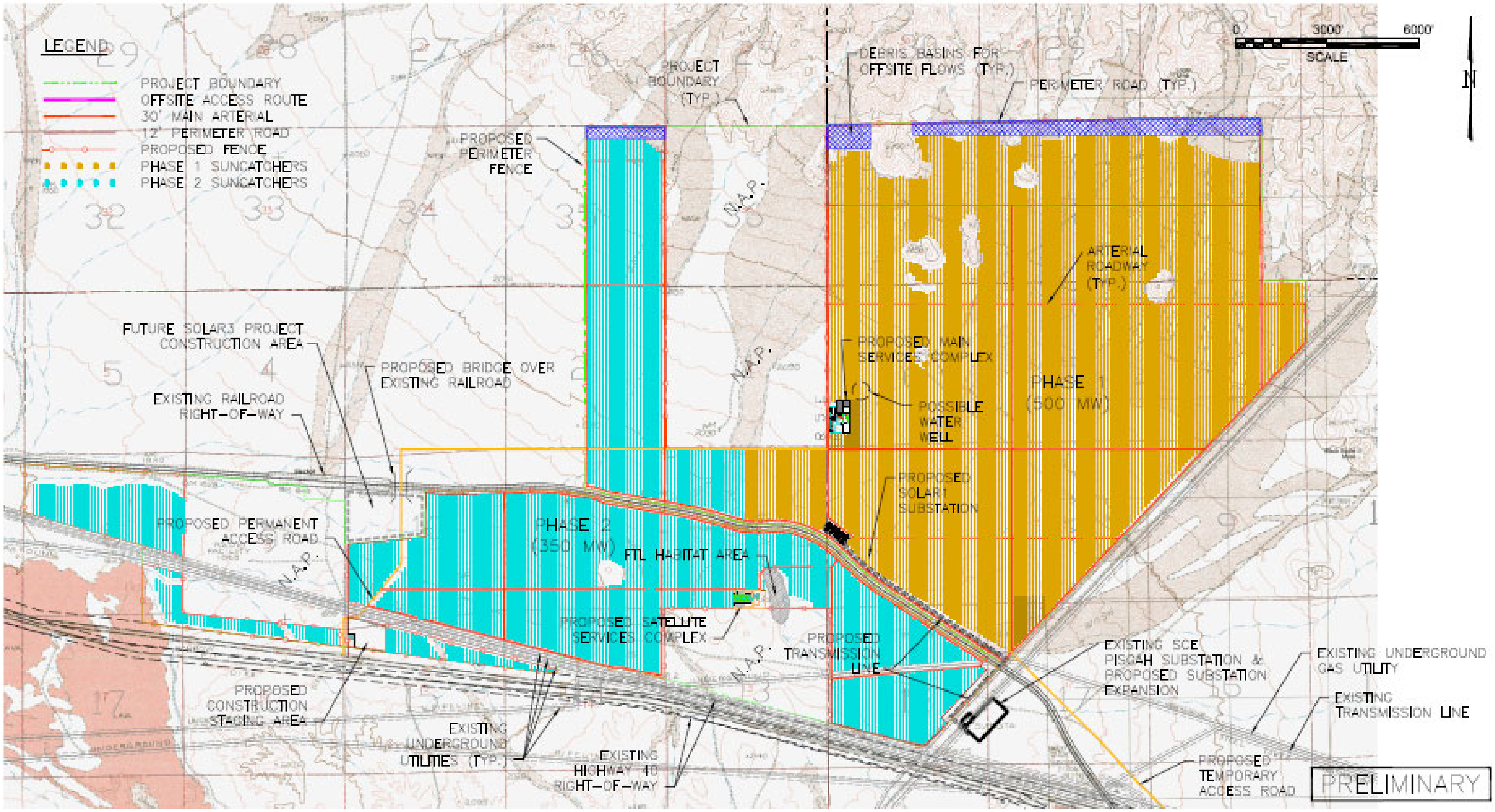
Figure 2.1-1 Location Map



2.2 Site Plan

The Solar One site occupies approximately 10,500 acres of land. The project boundaries are shown on Figure 2.2-1, Site Map. Most of the land is managed by the Bureau of Land Management (BLM), however there are also portions which are privately owned. Those private lands are shown as Not a Part (N.A.P.).

Figure 2.2-1 Site Map



3.0 SITE DESCRIPTION

3.1 Field Investigation

Field inspections of the site by Stantec were conducted on the following dates:

16 August 2006 – Solar 1 Pilot Site field investigation
This trip was conducted for the purpose of investigating the site for the hydrology analysis of the pilot site.

14 March 2007 – Solar 1, 3 & 6 Site field investigation
This trip was conducted for the purpose of investigating the area north of the railroad tracks, specifically the northwest area for preparation of the Plan of Development.

14 October 2008 – Solar 1, Phase 1 & 2 Site field investigation
This trip was conducted prior to completing this report to investigate the culverts, trestles and the watershed areas both south and north of the railroad tracks and south of the highway.

28 October 2008– Solar 1, Phase 1 & 2 Site field investigation
This trip was conducted for a general project site overview with members of Stantec, SES, BLM, CEC and URS Corp.

Field trips involved primarily driving the site on the existing unimproved roads and trails and due to the size of the site, a limited amount of walking and observations were made of the following:

- Observed general drainage flow paths
- Observed the culverts along the interstate
- Observed the railroad embankment and trestles
- Took photos of the site
- Evaluated the soil types with regard to drainage characteristics
- Evaluated the presence of alluvial fans / plains

- Evaluated sediment transport processes at the site

3.2 Field Survey

Survey crews collected the following information in October 2008:

- cross section elevations of some of the major washes on the site
- culvert locations and sizes

Locations of the surveyed cross sections, culverts and trestles are shown on Figure 3.2-1, Cross Section Map. Locations of culverts and trestles as well as the Pisgah Crater lava flows are also shown on an aerial photo in Figure 3.3-2, Culvert and Trestle Location Map.

Figure 3.2-1 Cross Section Map

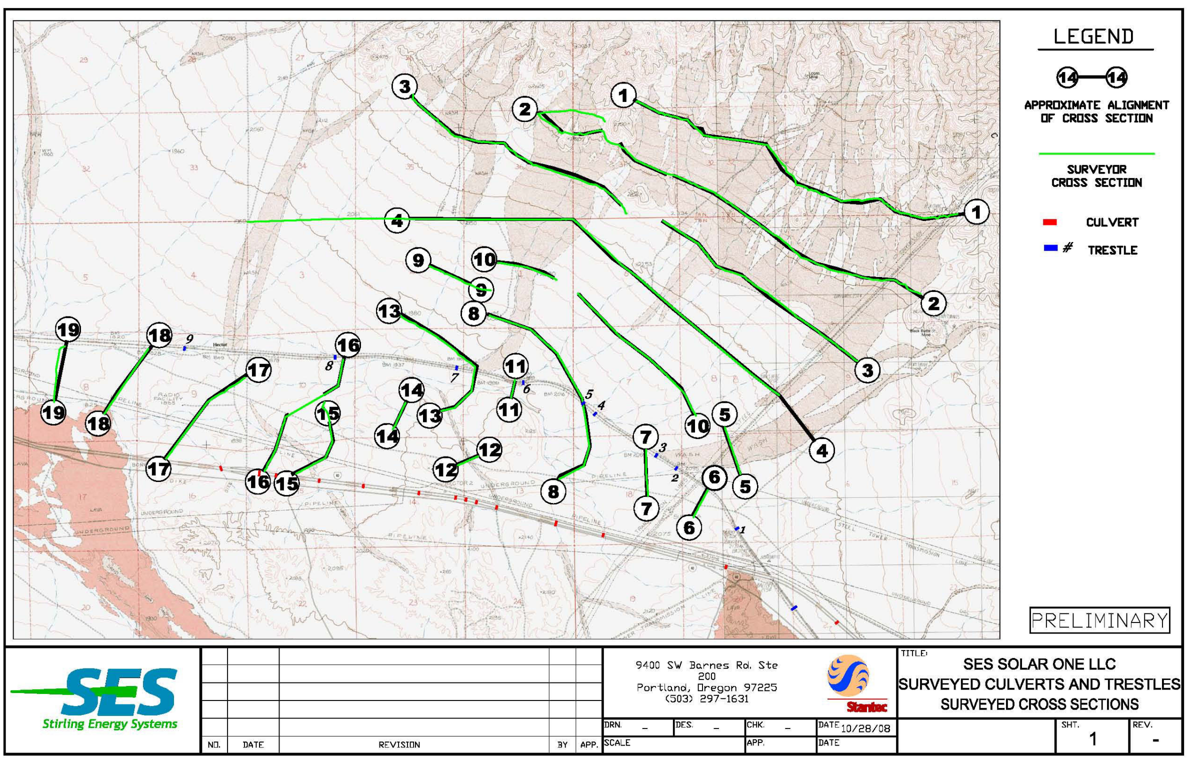


Figure 3.2-2 Culvert and Trestle Locations Map

3.3 Watershed General Characteristics

The watershed is characterized by rugged, weathered mountains on the north and east sloping down to a moderately sloped plain, typical of the basin and range province. The ground surface at the proposed site generally slopes from the northeast to the southwest from an approximate high point elevation of 2,240 feet above mean sea level (msl) to the southwestern side of the site with an elevation of approximately 1,800 feet. Slopes range from approximately 2% – 4% across the site except along the most westerly wash where the slope is approximately 1%. Average slopes in the mountainous offsite watershed range to 10% with maximum elevation of over 3,600 feet.

The site lies in the Mojave desert and the climate is hot and arid. The 100-year, 24-hour rainfall total depth is estimated to be just 3.8 inches. Vegetation is sparse and consists of sage brush, creosote and some patches of grass. The site is overlain with primarily alluvial deposits of sand with some gravel and a few cobbles and boulders. Near the site to the south is a massive lava flow from the Pisgah Crater which is approximately 3 miles south of the pilot site. It appears that there are also volcanic deposits which are presumed to emanate from the Pisgah Crater.

The offsite watershed extends easterly into the Cady Mountains. Runoff emanating from these mountains flows across alluvial fans and then across a broad alluvial plain into the project site. There is also a watershed south of the project site which emanates from the Pisgah Crater. That runoff flows northwesterly and crosses through the highway to impact the southerly part of the site.

3.4 Soils

Site soils are generally of four different types. Within wash areas, soils vary from silty to gravelly fine sands which are loose, un-compacted and exhibit little cohesion. Soils in these areas are deposited by fluvial action and are often uniformly graded (sorted). See Photo 3.4-1 for an example of Sandy soil in a wash crossing the road north of the Pisgah Substation.

Photo 3.4-1 Sandy Soil in Wash Area

See Photo 3.4-2 for an example of silty soil within a dry wash.

In higher areas, which are not subject to concentrated water flows, soils are more densely compacted and contain larger gravels, cobbles and boulders. Soils in these areas exhibit relatively little desert varnish but in places, do appear to be armored. See Photo 3.4-3 for an example of armoring.

Photo 3.4-2 Silty Soil in Wash Area

Photo 3.4-3 Armoring

In some areas, rock outcrops are observed which appear to be either exposed bedrock (near the mountains) or lava flows near the crater. See Photo 3.4-4 for an example of a lava flow which is south of the Pisgah Substation.

Part of the area is littered with pyroclastic material presumably from the Pisgah Crater which is several miles southeast of the project site. The mountainous offsite watershed area includes massive outcrops of bedrock. The bedrock is highly fractured and weathered.

Photo 3.4-4 Lava Flow

3.5 BNSF Railroad

The Burlington Northern Santa Fe (BNSF) Railroad line bisects the site generally in an east – west direction and divides Phase 1 and Phase 2. Phase 1 is entirely north of the tracks and the majority of Phase 2 is south of the tracks. A small portion of Phase 2 also lies north of the tracks on the west side. The railroad is elevated above the natural ground where it passes through the project site and generally consists of 2 or more sets of rails. Upstream and downstream of the railroad embankment, drainage channels have been formed which divert stormwater and protect the rail lines. Trestles pass stormwater under the tracks generally from north to south and from east to west.

3.6 Interstate 40

Interstate 40 forms the approximate southern boundary of the project site. It is generally elevated slightly above the natural ground where it passes through the project site. Culverts and bridges pass the stormwater under the highway onto the project site.

4.0 FEMA FLOODPLAIN CLASSIFICATION

4.1 Alluvial Fan

The watershed areas lying immediately below the mountains on the north side of the site are determined to be part of a series of alluvial fans and meet the description provided by FEMA for stage 1 determination of an alluvial fan[2].

FEMA provides the following definitions for Alluvial Fans and Alluvial Fan Flooding:

***Alluvial Fan** -- An alluvial fan is a sedimentary deposit located at a topographic break such as the base of a mountain front, escarpment, or valley side, that is composed of stream flow and/or debris flow sediments and which has the shape of a fan, either fully or partially extended.*

***Alluvial Fan Flooding** - flooding occurring on the surface of an alluvial fan or similar landform which originates at the apex and is characterized by high-velocity flows; active processes of erosion, sediment transport, and deposition; and, unpredictable flowpaths.*

An alluvial fan may exhibit both active and inactive alluvial fan flood hazards. Determination has not been positively made whether the fans are active or inactive. However, it should be assumed that portions are active. Counter to active alluvial fan flooding, inactive alluvial fan flooding is characterized by relatively stable flow paths. Even if parts of the project site are in inactive alluvial fans, they may still be subject to sediment deposition and erosion, but to a degree that does not cause flow path instability and uncertainty. Although project development on the fan, outside of the existing wash locations is at risk of flooding in the future, it is assumed that the risk from 100-year flooding, outside of the limits of these washes is low.

As is typical with alluvial fans, storm runoff through the site consists of both channelized flows as well as sheet flows. Sometimes, both types of flow pattern occur in the same wash. Existing USGS topographic mapping accurately depicts the approximate alignment of the washes. In most cases however, the alignment is shown simply as a blue line. This doesn't define the limits (width) of the wash. In other cases, the maps show a shaded flooding area

[2] Federal Emergency Management Agency, Guidelines for Determining Flood Hazards on Alluvial Fans, February 2000

which does illustrate the fact that the wash is larger and varies in width. These shaded areas are typically quite conservative and show a large area with the potential for storm runoff. However, again the limits of the wash and width of the flood prone areas may not be accurately shown on the USGS maps.

4.2 FEMA Flood Mapping

The site is not mapped on FEMA Flood Insurance Rate Maps (FIRM), however the area is designated as Zone D.

FEMA provides the following definition for Zone D:

The Zone D designation is used for areas where there are possible but undetermined flood hazards. In areas designated as Zone D, no analysis of flood hazards has been conducted. Mandatory flood insurance purchase requirements do not apply, but coverage is available. The flood insurance rates for properties in Zone D are commensurate with the uncertainty of the flood risk.

As described in section 4.1, Alluvial Fan, the site meets the Stage 1 definition of an alluvial fan and areas within the site are subject to active and / or inactive alluvial fan flooding. However, due to the relatively low rates of precipitation observed in the area, the overall risk due to flooding is low.

5.0 HYDROLOGY

5.1 Hydrologic Setting

The project site lies within the Mojave Desert, and is part of the Great Basin. The Great Basin is a 200,000 square mile area that drains internally. All precipitation in the Great Basin evaporates, sinks underground or flows into lakes (mostly saline). Creeks, streams, or rivers find no outlet to either the Gulf of Mexico or the Pacific Ocean. The Great Basin is bounded by the Wasatch Mountains to the east, the Sierra Nevada to the west, and the Snake River Plain to the north.

The topography of the watershed is typical of the Basin and Range Province. The site lies along the edge of the valley at the foot of the Cady Mountains. As is typical with the basin and range system, the basin is bounded by the Pisgah and Lavic Lake Faults. Weathering and erosion from the mountain ranges over thousands of years has created a layer of sediment which has been deposited due primarily to alluvial processes in the valley, mostly burying the bedrock.

The site is located northwest of the Pisgah Crater, also known as Pisgah Volcano. The volcano is the youngest vent in the Lavic Lake volcanic field. It is speculated that there may have been activity at this site as recent as 2,000 years ago, though more likely 20,000 to 50,000 years ago. The lava flows extend over 10 miles from the cone and are visible at the ground surface within portions of the project site. The crater and lava flows can be clearly seen in the aerial photo in Figure 3.3-2.

The project site is located generally on a gently sloping alluvial surface. On the west side of the site, slopes vary from about 1.5% – 4.5% and exhibit the characteristics of an alluvial fan or plain. Slopes within the mountainous watershed north and east of the site are steeper. These slopes promote runoff of floodwater when the precipitation rate exceeds the infiltration rate of the soil.

The Mojave Desert is one of the hottest and most arid regions in North America. The project site lies approximately 80 miles south of Death Valley. This region is one of the more arid parts of the Mojave Desert with an average annual precipitation of approximately 5 inches (measured in Barstow). Maximum recorded 24-hour precipitation is 1.57 inches (measured in Barstow). February is the wettest month with a mean rainfall of 0.99 inches and a maximum of 4.22 inches. June is the driest month with a mean rainfall of 0.06 inches and maximum of 0.60 inches. Average annual maximum and minimum temperatures are 80º F and 50º F. Daily maximum and minimum temperatures are 115º F and 8º F. Average annual pan evaporation is over 140 inches.

Storm runoff through the site is likely during short duration thunderstorms where precipitation intensity exceeds the infiltration and losses on the site. Since thunderstorms typically cover small aerial extents, it is possible that localized flooding will be experienced in parts of the site while other parts may remain unaffected. <u>Overall, the risk from flooding is low.</u>

5.2 Surface Water

There are no perennial streams within the project site or in the area. The nearest major ephemeral stream is the Mojave River which is approximately 15 miles northwest of the site and does not pose a flooding hazard to the project. The site is traversed by a number of small ephemeral washes. These are normally dry streambeds, which may flow after significant rainfall. Washes fill up quickly during rains, and there may be a sudden rush of water after a thunderstorm begins upstream, such as during monsoon conditions.

No floodplains have been delineated by the Federal Emergency Management Agency (FEMA), however a preliminary floodplain delineation is presented in this study to identify significant washes within the project site, which may pose a flooding hazard during the 100-year storm. However, it is apparent from observations that much of the stormwater runoff through the site occurs by sheet flow with relatively low velocities and flow depths.

5.3 Watershed

<u>Phase 1</u>

In general, drainage in Phase 1 of the project area flows southwest from the Cady Mountains, however along the south boundary of Phase 1, some flows are diverted by the railroad and flow straight west.

As shown there is an offsite watershed area of nearly 20 square miles which drains either directly to the Phase 1 project site or drains to the railroad tracks and is partially diverted into Phase 1. The Phase 1 site is nearly 10 square miles so the total watershed area for

Phase 1 is approximately 30 square miles. Approximately 10 blue line streams pass through the Phase 1 project area. Several of these coalesce into larger washes and all drain to the railroad at the southern boundary of the Phase 1 site.

The runoff from Phase 1 flows through the existing trestles at the railroad. Photo 5.3-1 shows a typical trestle at the BNSF railroad. Some of the trestles may have insufficient capacity to pass 100-year flows and some flow is diverted west along the railroad on the southern boundary of the project site and eventually flows through trestles along the southern boundary of the Phase 1 site.

Photo 5.3-1 BNSF Railroad Trestle

It is assumed that the 100-year flood will generally be conveyed along the railroad and through the trestles along the railroad right of way. This right of way is excavated and maintained by the BNSF Railroad Company to allow the water to pond and flow at low velocities. The right of way is delineated along the north line with a barb wire fence.

The offsite watershed impacting Phase 1 emanates from the Cady Mountains which flank the northeast side of the project area. Field investigation and review of the topographic maps suggest that the watershed consists of a series of alluvial fans which coalesce to form a Bajada. From review of the topographic mapping in the field, it appears that the areas with the highest current risk of active flooding are generally shown on the USGS 7.5 minute quadrangles. These areas are indicated as blue lines and as shaded wash areas. While these areas are easily identifiable on the mapping, they may be occasionally difficult to identify in the field. Washes are often well incised near the base of the mountains. However, these same washes transition into sheet flow and shallow concentrated flow areas which do not have a well incised channel or with a series of small channels which are braided and all may carry a fraction of the total wash flow. The sheet flow areas can be clearly seen in the aerial photo in Figure 3.3-2. Sheet flow is defined as flow of water as broad sheets that are unconfined by channel boundaries. Because the sheet flow and braided wash flow may carry a sediment load and follow unpredictable flow paths, development within these areas might be impacted by the storm water. Sheet flow areas appear to be more prevalent at distal locations from the apex of the fan. These locations are primarily within the proposed site development area.

Phase 2

The Phase 1 watershed which emanates from the Cady Mountains drains through the trestles on the railroad and then flows west through the Phase 2 site. This watershed has an area of nearly 30 square miles, however the railroad embankment has diverted and channelized much of the flow creating numerous ponding areas upstream of the railroad trestles. The trestles and ponding areas attenuate the peak flow and allow most of the sediment to drop out on the upstream (north or east) side of the railroad embankment. Additional drainage flows south from the Cady Mountains, west of the Phase 1 property limits, is diverted at the railroad tracks and then flows south in the Phase 2 area. This is another 10 square miles of watershed.

In addition to the Cady Mountain watershed, a second watershed is located south of the freeway and includes the Pisgah Crater and lava flow area. Runoff from this watershed generally flows either north or west. It reaches the Interstate highway and then continues north through numerous culverts and bridges into the Phase 2 project area. Photo 5.3-2 shows a typical culvert at I-40. After flowing through the culverts at the highway, the runoff commingles with the flow from the Cady Mountains and then flows west to the outfall. This watershed is approximately 13 square miles. As with the Cady Mountain Watershed, the Pisgah Watershed is diverted by the Interstate highway embankment and associated dikes and berms to be passed through culverts. Ponding occurs at these culvert locations and this reduces the peak flow and sediment loads which pass through the culverts.

Photo 5.3-2 Typical Culvert at I-40

In addition to these two offsite areas impacting Phase 2, the Phase 2 project site area which lies between the railroad tracks and the highway is over 6 square miles. Total watershed area impacting the downstream end of Phase 2 is roughly 60 square miles.

Temporary Site Access Road

Temporary site access is proposed along a new roadway alignment southeast of the project site and is shown on Figure 2.1-1. Storm runoff impacting this alignment is from a watershed area of approximately 4 square miles. There is just one blue line stream impacting the roadway alignment with a contributing drainage area of approximately 2 ½ square miles.

Primary Site Access Road

Primary access for the site is along Hector Road from I-40, north to the railroad crossing the Phase 2 site. There are three blue line streams which cross the proposed access road alignment and all of these drain large watersheds.

Nearly all of the runoff from the Cady Mountain watershed which passes through Phase 1 and from the Pisgah Crater watershed combines to flow towards Hector Road in three main washes. The largest (most northerly) wash flows northwest where it crosses back north through a trestle about ½ mile east of Hector Road. This allows flow to continue back to the north side of the tracks. From review of the aerial photos, it appears that this trestle allows flow to cross back to the north during most small storms. However, during larger storms, some of the flow bypasses the trestle and continues west towards the Hector railroad crossing along the railroad right of way.

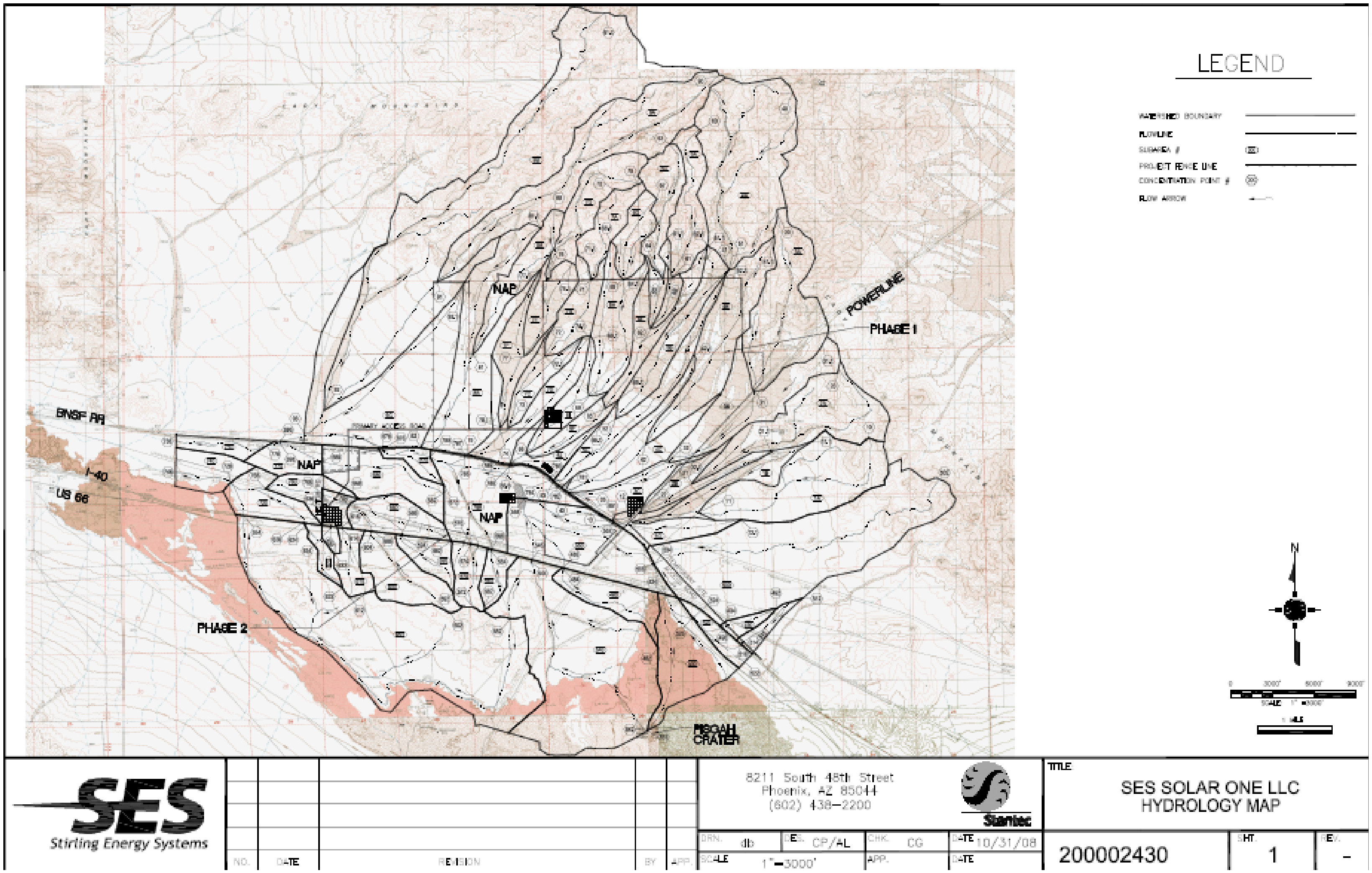
Once the flow is diverted back north through the tracks, it turns west, combines with additional runoff from the north side and then crosses Hector Road on the north side of the tracks. The area along the railroad right of way on both the north and south sides is a graded road which acts as a channel. Field investigation shows that it appears to have carried flows which have deposited sediment in the right of way.

The other two washes cross Hector Road south of the railroad crossing. It appears from observation in the field that stormwater runoff crosses the road in these washes along with some sediment which is deposited on the low sections of the roadway.

The washes carry sediment including silt, sand, gravel and cobbles from the mountains where they emanate. The material settles out as the flows continue down slope, with the larger gravels and cobbles dropping out first in the alluvial fan areas at the toe of the mountains and the finer particles being passed farther downstream on the alluvial plain. Most of the fine sand and silt is dropped within the project site or on the north side of the railroad tracks where the water ponds and then is diverted through the trestles and to the west. Fine sands are also deposited in the existing roadways and trails which exist throughout the site. These roadways perform as shallow flood channels, capturing stormwater and conveying it down slope.

Figure 5.3-3, Hydrology Map illustrates the general drainage system in and surrounding the project area.

Figure 5.3-3 Hydrology Map



5.4 Runoff Estimates

Storm runoff is estimated using a rainfall – runoff modeling procedure which utilizes the unit hydrograph procedures, guidelines and criteria presented in the San Bernardino County Hydrology Manual (Manual). Analysis is done using Advanced Engineering Software[3] (AES) to calculate stormwater runoff rates coming from the watershed and flowing through the project site.

Precipitation

Rainfall data from gages are limited in this area due to the lack of rainfall and the lack of populated areas. Precipitation is estimated using published values in NOAA 14[4]. Values were obtained based on latitude and longitude of the site and an average value for the site was determined using the internet based Precipitation Frequency Data Server (PFDS) at http://hdsc.nws.noaa.gov/hdsc/pfds/. The design precipitation values are summarized in Table 5.4-1, Precipitation Depth – Duration – Frequency.

Table 5.4-1 Precipitation Depth – Duration - Frequency

Duration	Rainfall (in)		
	10-year	25-year	100-year
5 min	0.29	0.39	0.57
30 min	0.74	0.99	1.45
60 min	0.92	1.22	1.80
3 hours	1.32	1.68	2.33
6 hours	1.70	2.15	2.89
24 hours	2.33	2.89	3.80

Design storm is based on the Soil Conservation Service[5] (SCS) 24-hour storm pattern as modified by the San Bernardino County Flood Control District (SBCFCD). Precipitation

[3] AES 2008, Version 15.0, San Bernardino County Method - Flood Hydrograph and Link Node Modeling

[4] NOAA Atlas 14, Precipitation-Frequency Atlas of the United States, Volume 1 Version 4.0: Semiarid Southwest (Arizona, Southeast California, Nevada, New Mexico, Utah), U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Silver Spring, Maryland, 2004, revised 2006

[5] National Resource Conservation Service

amounts are adjusted for the runoff analysis by using the depth - area reduction relationship given in the Manual.

Antecedent moisture conditions (AMC) II is assumed. The SBCFCD recommends using AMC III for 100-year storm runoff analysis, however for the proposed site it is assumed that under typical circumstances, the site is generally AMC I and rarely obtains sufficient rainfall to be classified as AMC II.

Losses

Storm runoff is a function of precipitation, losses and routing process. Losses are considered to be depression storage, vegetation interception and transpiration, evaporation and infiltration. For modeling purposes, losses are grouped into two components including: infiltration and initial abstraction. Infiltration is primarily related to the soil types and compaction.

Soils

A major factor affecting the loss rates of storm water is the nature of the soil. For hydrologic purposes, soils are grouped into types A – D which range from very deep, pervious, well draining soils such as sands and gravels to soils which are shallow and lie over an impervious layer or clay soils which have a very slow rate of water transmission. According to the hydrologic soils group map provided in the Manual, the soils in the project area on the alluvial fan and alluvial plain are type C which is described as having slow infiltration rates and consisting chiefly of silty-loam soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture.

From field investigation, it was observed that the surface soils on the site and on the alluvial plain are generally loose sand with some gravel and cobbles and small to moderate amounts of silt. There is not a well developed desert pavement or crust in most areas. This would correspond to a Type A or B soil group. For this analysis it is conservatively estimated that most project site soils are Type B. This soil type is defined as having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well to well drained sandy-loam soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

According to the hydrologic soils group map, the mountainous area of the watershed, east of the site are classified as type D which has a very slow rate of water transmission and a high runoff potential. For this analysis it was assumed that the mountainous area should be a combination of Type C and Type D. This accounts for areas within the mountains or near the base of the mountains which have significant depth of sandy soil overlying the bedrock. These soils will have a slow to very slow rate of water transmission.

Even though the lava flows consist of massive outcrops of rock and piles of boulders and cobbles, they are considered to be type C soils. Based on the field review, this is a reasonable assumption as the lava flows were observed to be highly fractured and faulted and will result in considerable runoff losses due to relatively high rates of infiltration and depression storage. In general, they overly alluvial sands and gravels that are moderate to well draining.

Vegetative Cover

As can be seen from Photo 5.4-1, vegetative cover is sparse on the site and is assumed to be approximately 10 – 20 percent density.

Photo 5.4-1 Sparse Vegetative Cover

Type of vegetative cover has a large impact on the infiltration capacity of the soil. The cover is natural desert and will remain relatively undisturbed even after development. Some cover will be removed during development where roads are graded and where the solar arrays are located. Currently, cover condition is poor and cover will be reduced somewhat by construction. SCS curve numbers are estimated for the site assuming AMC II and shown in Table 5.4-2, Runoff Curve Numbers. In general, these estimated curve numbers are high and result in a conservative estimate for the amount of storm runoff impacting the site.

Table 5.4-2 Runoff Curve Numbers

Area	Cover Type	Quality of Cover	Curve Number
Mountain Type C/D soil	Barren (rockland, eroded and graded land)	barren	92-93
Alluvial Plain Type B soil	Open Brush (creosote, sage, etc.)	poor	82-83
Lava Flows Type C soil	Barren (rockland, eroded and graded land)	barren	90

Land Use

Under present conditions the watershed is nearly completely undeveloped. The assumption is made that in the future, the only significant development will be light industrial use on the project site itself and that the offsite watershed will remain undeveloped. This use will include operation and maintenance of the dish array which will primarily consists of cleaning and inspections on a periodic basis. No significant change in the loss rates from existing condition to developed condition is anticipated.

Unit Hydrograph

Unit hydrograph lag times are calculated using the Corps of Engineers method and the San Bernardino County Desert S-graph is used to generate the unit hydrographs. Basin N-values generally range from 0.035 to 0.040 and this is considered a conservative estimate. However, N-values for areas containing lava flows are estimated considerably higher, up to 0.080.

Flood Routing

Channel routing is calculated using the convex method. Culverts are routed using the pipe routing method. Storage routing at culverts and trestles is not done since there is insufficient data to estimate the parameters necessary for such a routing. This results in a conservative estimate of the routing times and flows.

Peak Flood Runoff

The areas draining through the project site have been delineated as previously illustrated in Figure 5.3-2. The following Table 5.4-3, Summary of Flood Discharges summarizes drainage area and projected peak discharges for 100- and 25- year storm runoff under assumed future conditions for each of these basins.

Table 5.4-3 Summary of Flood Discharges

Basin	Node	Area (ac)	Q_{25} (cfs)	Q_{100} (cfs)	Comment
1A	11	1,102	913	1,442	
1B	12	304	1,103	1,776	
1C	13	293	2,262	3,615	At Railroad
2A	21	917	798	1,242	
2B	22	272	985	1,564	At construction laydown area
3A	31	997	1,103	1,702	
3B	32	761	1,723	2,698	At Hector Road
3C	33	310	1,791	2,927	At Railroad
4A	41	1,687	1,738	2,654	
4B	42	826	2,408	3,740	At Hector Road
4C	43	549	2,829	4,391	At Railroad
5B	52	452	2,117	3,316	At Hector Road
5C	53	495	2,440	3,822	
6A	61	1,426	1,745	2,651	
6B	62	107	1,875	2,856	
6C	64	366	483	733	
6D	62	93	590	903	
6E	65	353	2,680	4,141	At Hector Road
6F	66	166	2,745	4,253	At Railroad
6G	68	254	337	512	At site boundary
6H	69	556	906	1,429	Hector Road Upstream of Main Admin. Complex
6I	66	246	1,088	1,699	
6J	66.5	246	3,806	6,000	
7A	71	291	386	585	
7B	72	328	744	1,170	At Hector Road

Basin	Node	Area (ac)	Q_{25} (cfs)	Q_{100} (cfs)	Comment
7C	73	246	900	1,462	At Primary Access Road
7D	76	487	509	800	
7E	77	305	863	1,364	At Hector Road
7F	78	304	1,048	1,627	At Primary Access Road
7G	79	442	2,216	3,576	At Railroad
8A	81	351	413	632	At Hector Road
8B	82	1,070	1,309	2,025	At Railroad
9A	91	1,426	1,293	1,963	At site boundary
9B	92	3,747	3,650	5,624	
9C	93	1,558	4,512	6,974	
480	484	370	308	482	At highway
490	494	83	155	238	
500	504	2,473	1,820	2,842	
510	514	102	154	239	
520	524	158	298	440	
530	534	655	548	807	At highway
540	544	2,381	1,243	1,920	At highway
550	558	1,042	2,982	4,504	
560	564	155	257	397	At highway
570	574	223	357	553	At highway
590	594	207	307	475	At highway
600	604	497	659	1,024	At highway
610	614	202	336	518	At highway
620	624	103	162	250	At highway
630	634	46	116.5	177	At highway
650	654	3,283	1,189	1,860	At highway bridge on west end
660	668	361	1,129	1,847	
670	676	126	9,684	11,565	Flows north through railroad trestle
680	688	562	824	1,291	At Hector Road
720	728	336	2,686	4,099	
730	738	199	1,374	1,896	At outfall
740	748	288	2,727	4,181	At outfall
750	758	114	1,412	2,174	At Hector Road

Basin	Node	Area (ac)	Q_{25} (cfs)	Q_{100} (cfs)	Comment
760	768	205	1,466	2,269	
770	778	239	1,413	1,908	
780	789	895	9,694	11,608	

6.0 HYDRAULICS

6.1 Flow Characteristics

Flood flow through the site consists of channelized flows as well as sheet flows and shallow concentrated flows. Precise limits of flood inundation in these areas are difficult to accurately define since the flow paths are uncertain and changing. In addition, small floods may remain in better-defined channels while larger floods will likely carry larger amounts of sediment and are more likely to break out, flow overbank and potentially shift course during the flood event. Photo 6.1-1, Typical Sheet Flow Area depicts a typical area of the site which experiences frequent sheet flow during rain storms.

Photo 6.1-1 Typical Sheet Flow Area

6.2 Erosion and Sedimentation

Erosion, sediment transport and deposition all occur on the site. In general, it appears that the sediment balance is positive, that is the net amount of sediment on the site is increasing with time. Portions of the watershed are identified as alluvial fans. Construction of the interstate and railroad embankments has altered the flow conditions through the site. However, sediment is still being deposited within the site which is generated in the alluvial fan areas.

In addition to sediment deposition, erosion is also expected to occur on the site during rainfall events. Where flow is channelized, both naturally and by site grading operations, erosion can be expected to occur. Where roads are constructed, these often provide a preferential location for flow to concentrate and for erosion and sedimentation to occur.

Photo 6.2-1 Erosion at Culvert Outlet

Photo 6.2-1 shows erosion which has occurred since the highway culvert was constructed. Flow from several of the highway culverts along the south boundary of Phase 2 have created eroded channels similar to the one shown in the photo. These channels continue for just a short distance until the channel “daylights” and then flow fan out and return to sheet flow or shallow concentrated flow.

Photo 6.2-2 Typical Dry Wash

Photo 6.2-2, Typical Dry Wash also clearly shows a shallow, partially incised channel which could be expected to cause minor erosion if a structure was placed next to the channel.

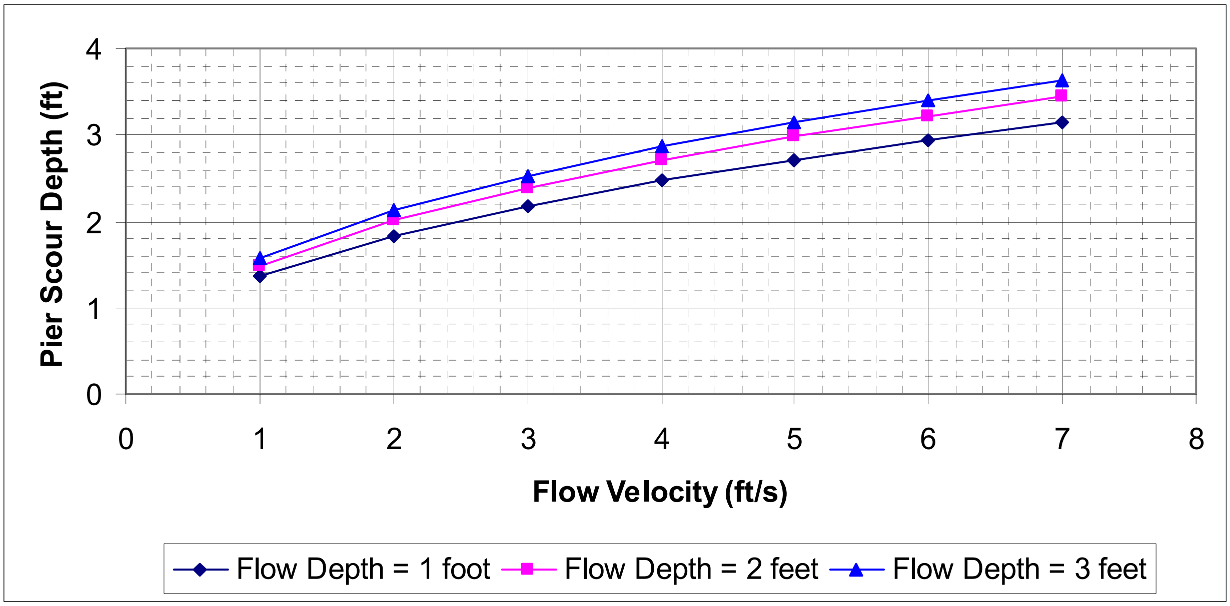
Pier Scour Analysis

Scour analysis was conducted for the SunCatcher foundation piers. Analysis was based on the CSU Pier Scour equation[6][7]. Estimated scour for the range of flow conditions expected in

[6] USDOT, 1995b. Evaluating Scour at Bridges, Hydraulic Engineering Circular No. 18, Federal Highway

the solar field is shown in Figure 6.2.3, Estimated Scour at SunCatcher Foundations. Maximum scour expected at the SunCatcher foundations is approximately 2 – 3 feet which is not an excessive amount.

Figure 6.2-3 Estimated Scour at SunCatcher Foundations



6.3 Floodplain Analysis

All significant drainage channels within the project area were analyzed using a combination of HEC-RAS[8] and FlowMaster (Bentley) to determine the extent of inundated areas during flood events. In addition to the USGS topographic information, surveyed cross sections were obtained as shown in Figure 3.2-1.

Discharges presented in the previous section were used in this analysis. Starting water surface elevations were determined by assuming normal depth at the downstream end of the stream. Manning's roughness coefficients were assigned to each cross-section based on photos of the site. Values are generally 0.040 for channels and 0.050 for overbank flow. Hydraulic output showing each of the channels and cross-sections can be found in Appendix B.

Administration, FHWA-IP-90-017, 3rd Ed.
[7] Richardson, E.V., D.B. Simons, and P.F. Lagasse, 2001, "Highways in the River, Environment," FHWA NHI 01-004, Federal Highway Administration, Hydraulic Series No. 6, Washington, D.C.
[8] River Analysis System, U.S. Army Corps of Engineers, Hydrologic Engineering Center

A summary of the hydraulic analysis are presented in Table 6.3-1, Summary of Floodplain Hydraulic Analysis. The results of the hydraulic analysis are interpreted and plotted on Figure 6.3-1, Floodplain Map.

Table 6.3-1 Summary of Floodplain Hydraulic Analysis

Basin 3A

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
1	100-year	1702	1.31	196
2	100-year	1702	0.68	525
3	100-year	1702	0.52	799
4	100-year	2698	0.70	805
10	100-year	2698	0.93	727

Basin 4B

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
1	100-year	2654	1.39	279
2	100-year	2654	1.17	364
3	100-year	2654	0.78	682
4	100-year	3740	1.11	558
10	100-year	3740	0.87	800
8	100-year	4392	1.70	436

Basin 5B

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
1	100-year	2654	1.59	233
2	100-year	2654	1.04	437
3	100-year	2654	2.01	163
4	100-year	3174	1.22	408
10	100-year	3174	1.01	930
8	100-year	3822	1.77	358

Basin 6B+6D

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
1	100-year	3759	1.82	266
2	100-year	3759	1.80	272
3	100-year	3759	1.34	240
4	100-year	4141	1.55	518
10	100-year	4141	1.00	706
8	100-year	5952	1.31	915

Basin 6G

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
1	100-year	512	0.82	120
2	100-year	512	0.85	113
3	100-year	512	1.00	88
4	100-year	1430	1.08	358
10	100-year	1430	0.51	662
8	100-year	5952	1.54	695

Basin 7A

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
1	100-year	512	0.83	119
2	100-year	512	0.68	157
3	100-year	512	0.62	184
4	100-year	1430	0.75	381
10	100-year	1430	1.64	152

Basin 7D

X-Sect	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
1	100-year	800	0.36	655
2	100-year	800	1.02	136
3	100-year	800	0.59	311
4	100-year	1364	0.55	581
10	100-year	1628	1.45	204
8	100-year	1628	0.53	875
13	100-year	1628	1.75	154

Basin 550

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
7	C3	100-year	1576	0.6	599
7	C4	100-year	1576	0.9	288
8	C1	100-year	1576	2.9	541
8	C2+C3	100-year	1576	0.4	1088
8	C4	100-year	1576	1.0	490

Basin 780

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
8	C5	100-year	2398	0.9	852
8	C6	100-year	2398	1.4	406
11	C7	100-year	3177	1.6	280
13	C8	100-year	3934	2.2	512
13	C9	100-year	841	1.2	324
12	C10	100-year	379	0.7	117
14	C12	100-year	5278	0.9	1052

Basin 670

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
16	C13	100-year	8461	2.2	805

Basin 680

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
16	C14	100-year	8461	2.0	847
14	C11	100-year	5278	1.41	550

Basin 770

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
17	C15	100-year	1291	0.4	755
18	C16	100-year	1908	1.3	829

Basin 730

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
19	C14	100-year	4181	1.3	690

Basin 660

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
15	C18	100-year	1023	1.2	230
15	C19	100-year	429	0.8	188
15	C20	100-year	429[9]	0.7	224

[9] Estimated based on similar nearby channel

Basin 750

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
16	C21	100-year	1847	2.4	178
16	C22	100-year	1847	1.4	210
16	C23	100-year	1847	0.9	502

Basin 760

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
17	C25	100-year	2270	0.9	509

Basin 720

X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
17	C24	100-year	2270	1.5	223

Basin 740

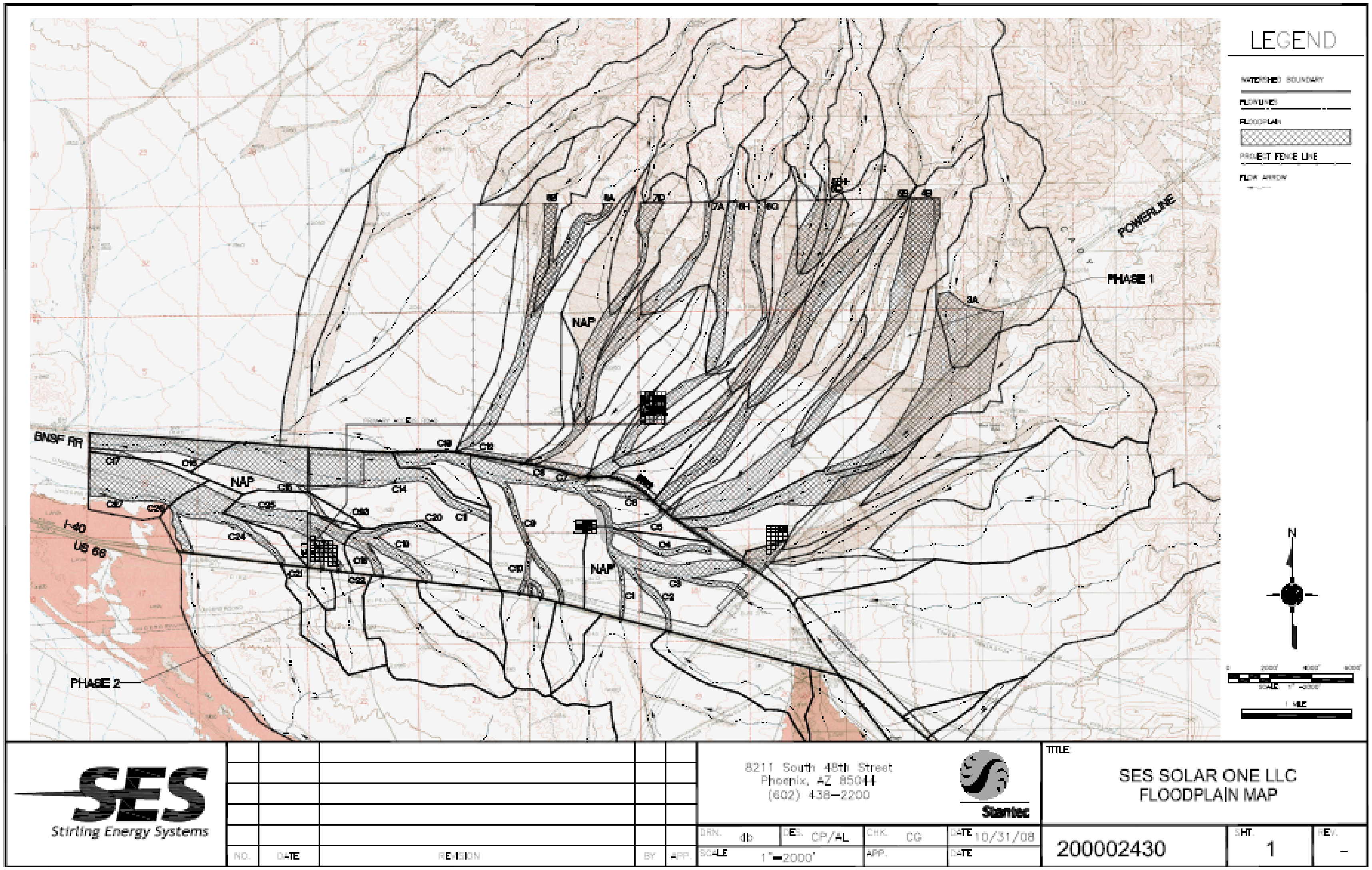
X-Sect	Channel	Event	Flow (Q) (cfs)	Depth (ft)	Top Width (ft)
18	C26	100-year	4099	1.1	1495
19	C27	100-year	4181	0.7	2107

HEC-RAS Modeling Assumptions

Due to the braided terrain on the fans, limited survey and topographic data and limitations of HEC-RAS to model such distributed flow areas, modeling assumptions based on engineering judgment were applied. For instance, on a given cross section, HEC-RAS will analyze the areas near the low point (thalweg) assuming they will convey all the stormwater. For smaller flood events this may be appropriate. However, during large flood flows the inertia of water from upstream is expected to spread the water over an extended area outside the thalweg. Particularly on an alluvial fan, such a condition cannot be readily simulated using a one-dimensional model like HEC-RAS. For more accuracy, it would require two-dimensional modeling. For the aforementioned limitation in HEC-RAS, the active top widths reported in HEC-RAS models were adjusted to cover greater or smaller widths as warranted by observation of topography. This adjusted width is shown on Figure 6.3-1 but is not reported in the table 6.3-1. Given the greater resistance to flow that is typical under braided conditions, this assumption should not change the hydraulic depth reported in HEC-RAS. Velocities are also not reported due to the limitations of the modeling method.

Hydraulic analysis of the floodplains relies on field measurements along a limited number of cross sections. Detailed survey such as high resolution aerial photos and photogrammetric mapping was not available. Detailed survey information when available could be used in future analysis to provide more accurate analysis of the floodplains.

Figure 6.3-1 Flood Plain Map



6.4 Trestle Analysis

For storms less than approximately 100-year, the railroad embankment is assumed to be able to pass the flow through the trestles and along the railroad embankment without overtopping the rails. Peak discharge through the trestles is limited to the capacity of those structures. Capacity of the structures was estimated using HY-8[10] software. Capacity analysis relies on field measurements taken of the structures. Detailed survey information providing the channel slopes, height of rails, height of berms, elevations of the low chord, and dimensions of the upstream and downstream channels was not available. Detailed information on these trestles could be used in future analysis to provide more accurate estimates of the flow capacities of the trestles.

Estimates of the hydraulic capacity of the trestles are shown in Table 6.4-1, Summary of Flows Through Railroad Trestles. The table shows full flow capacity of the trestles at the 100-year flows with an estimate of the breakout flows bypassing and continuing along the railroad tracks.

Table 6.4-1 Summary of Flows Through Railroad Trestles

Trestle	Capacity ft^3/s	Bypass ft^3/s	Total Flow ft^3/s
1	863	137	1000
2	2038	1577	3615
3	686	891	1577
4	4656	3552	8209
5	1577	5797	7374
6	6017	5779	11797
7	2162	7193	9355
8	6466	9699	16164
9	1664	14500	16164
10	7886	6614	14500

HY-8 Trestle Modeling Assumptions

1. The input flows, i.e., design and maximum flows included bypass from the immediate upstream trestle, as calculated by HY-8, along with the subarea tributary flows for the 100-year storm.

[10] Version 7.0, FHWA, 2007

2. Tailwater data was derived from the approximate width (span) of the trestle and 4:1 side slopes in a trapezoidal cross section, a 1% slope, Manning's "n" = 0.035 and the channel invert the same as the surveyed downstream flow line.

3. Railroad crest elevations were estimated from the soffit elevation of the beam (chord) spanning the trestle, depending on the measurements taken in the field.

4. Trestles were modeled as culverts with conventional inlet type, no inlet depression, beveled edge condition with Manning's "n" = 0.035.

5. All trestles were modeled as one barrel. There was insufficient measurements to input all the coordinates for the pier walls so the trestles are assumed to have no piers.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

The following conclusions can be developed based on the site observations and analyses presented.

- Portions of the site are subject to active and / or inactive alluvial fan flooding hazards. However, due to the relatively low rates of precipitation observed in the area, the overall risk due to flooding is low.

- The site is traversed by a number of major and minor washes. Some areas within the site exhibit a lack of well defined drainage channels. Site grading to provide adequate channels and drains to convey the storm water away from the roads, buildings and other improvements may be useful to control flooding in these areas.

- Site soils are erodible and storm runoff will cause both erosion and deposition of sediment.

- Estimated 25-, and 100-year discharges at the site boundary and other points of interest throughout the site have been determined and are presented in the report.

- Hydraulic analyses have been conducted for the major streams crossing the project site. In general these results confirm that broad shallow flooding with mostly low velocities and depths can be expected during flood events.

- Hector Road at the crossing of the railroad tracks is impacted by significant 100-year flows on both the north and south side of the tracks.

7.2 Recommendations

Based on site observations and analyses conducted, the following recommendations are offered.

- If possible, the site layout should be based on avoiding major washes and minimizing surface disturbing activities. However, given that much of the site is subject to alluvial fan and sheet flows, site facilities should be protected from flood damage.

Protection methods include erosion protection, elevation, channelization, and control of sediment.

- In areas that exhibit a lack of well defined drainage channels site grading should provide adequate channels and drains to convey the storm water away from the roads, buildings and other improvements and between rows of SunCatchers. This may include ditches or berms along roads, between rows of SunCatchers and upstream of buildings which will divert the runoff around the improvements.

- SunCatchers located within identified 100-year flood prone areas should be constructed for safe operation with the predicted flood and scour depths.

- Given that the site soils are erodible, erosion and sediment deposition will occur. These processes can cause drainage channels to erode away or to shift position during larger storms and may require additional maintenance grading of dirt roads and cleaning of any constructed drainage channels or diversions. Grading design should include provisions for either trapping the sediment to prevent it from leaving the site, or to allow it to continue through the site without being deposited on roads or in channels and culverts. Areas susceptible to increased erosion should be protected using riprap or other suitable protection.

- Paved roadways should have a low flow swale or roadway dip as needed to convey nuisance runoff across the road.

- Roadway dip crossings should be used for larger washes where the channel cross-section exceeds 8-feet in width and 3-feet in depth or exceeds 20-feet in width and 2-feet in depth. The roadway section at the channel flow line will not be crowned. Erosion protection could be provided by a concrete cut-off wall along the edges of the roadway with riprap upstream and downstream of the concrete cut-off wall.

- Arizona Crossings (roadway dips) may be placed along the roadways or low flow culverts consisting of a small diameter storm drain with a perforated stem pipe and a sediment basin as needed to facilitate the road crossing the minor or major channels / swales. These are based upon best management practices for erosion and sediment control.

- It is anticipated that roadway maintenance will be required following rainfall events. For minor storm events, it is anticipated that the unpaved roadway sections may need to be bladed to remove sediment deposition, along with sediment removal from around the stem pipe risers at the culvert locations. For major storm events, in addition to the aforementioned maintenance, roadway repairs may be required due to possible damage to pavement where the roadways cross the channels and where the flows exceed the culvert capacity.

- Maintenance may be required where SunCatchers are constructed within existing flood prone areas. Scour holes around the SunCatcher foundations should be filled in with erosion resistant material. Excessive sediment deposition near the structures should be removed.

- Localized channel grading may be used to improve channel hydraulics, and to control flow direction where buildings and roadways or SunCatchers are proposed.

- Building sites should be developed per County drainage criteria, with provision for stormwater retention basins to reduce post development runoff to pre-development levels. Rainfall from paved areas and building roofs should be collected and directed to the storm water retention basins. Volume in retention or detention basins should have a total volume capacity for the 100-year, 24-hour storm at the building site. Volume can be considered by a combination of basin size and additional volume provided within paving and/or landscaping areas.

- Retention basins should be designed so that the retained flows will empty within 72 hours after the storm in order to provide mosquito abatement. This can be accomplished by draining, evaporation, infiltration or a combination thereof.

- The Main Services Complex and the substation could be protected from a 100-year flooding by berms or channels that will direct the flow around the perimeter of the building site, if required.

- Large flows crossing Hector Road north and south of the railroad crossing should be channelized through the proposed bridge if possible.

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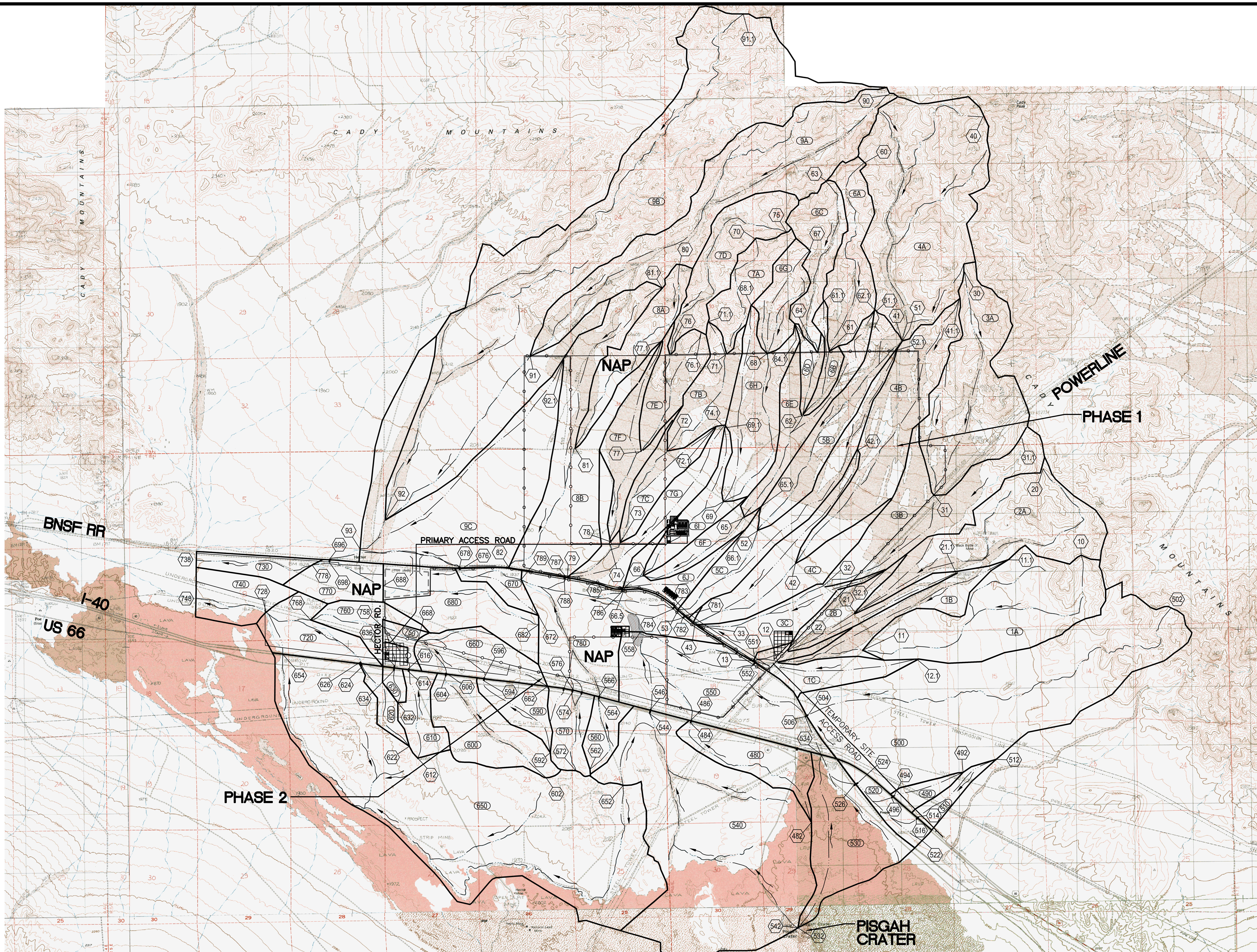
PLATES



LEGEND

WATERSHED BOUNDARY	
FLOWLINE	
SUBAREA #	XX
PROJECT FENCE LINE	
CONCENTRATION POINT #	XX
FLOW ARROW	

N

0 3000' 6000' 9000'

SCALE: 1" =3000'

1 MILE

Stirling Energy Systems

NO.	DATE	REVISION	BY	APP.

8211 South 48th Street
Phoenix, AZ 85044
(602) 438-2200

Stantec

DRN. db	DES. CP/AL	CHK. CG	DATE 10/31/08
SCALE 1"=3000'		APP.	DATE

TITLE:

SES SOLAR ONE LLC
HYDROLOGY MAP

200002430

SHT. 1

REV. -

SES
Stirling Energy Systems

NO.	DATE	REVISION	BY	APP.

8211 South 48th Street
Phoenix, AZ 85044
(602) 438-2200

Stantec

DRN. db	DES. CP/AL	CHK. CG	DATE 10/31/08
SCALE 1"=2000'		APP.	DATE

TITLE:

SES SOLAR ONE LLC
FLOODPLAIN MAP

200002430

SHT. 1

REV. -

Appendix A

Hydrology Analysis

Drainage Dimensions

Stirling Energy Systems, Inc
Solar One, LLC
Hector Mine, San Bernardino County, California
Stantec Consulting Proj. No. 2000024301
Initial Hydrology Study

Date:	10/30/2008	By:	klt
Date Checked:	10/31/2008	By:	cpp
Date Revised:		By:	

Drainage area size and length

Basin	Upstream Node	Downstream Node	Flowpath Length (ft)	Distance to Centroid (ft)	Elev Top (ft)	Flowpath Elev Bottom (ft)	Flowpath Elev Change (ft)	Flowpath Flowpath Slope (ft/ft)	Basin Factor Coef	Mannings' n	Channel Base (ft)	Channel Z factor	Channel Depth (ft)
	-	-							-	-		-	
Area 1A	10	11	16770	10882	2820.00	2160	660	0.0394	0.035	-	-	-	-
Stream Route	11	12	6270	-	2160.00	2095	65	0.0104	-	0.035	25	5	2
Area 1B	11.1	12	14475	5830	2440.00	2095	345	0.0238	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	12	13	1318	-	2095	2080	15	0.0114		0.035	25	5	2
Area 1C	12.1	13	9221	5830	2240	2080	160	0.0174	0.035	-	-	-	-
Combine Hydrographs													
Area 2A	20	21	18323	10424	2800	2200	600	0.0327	0.035	-	-	-	-
Stream Route	21	22	4290	-	2200	2115	85	0.0198	-	0.035	25	5	2
Area 2B	21.1	22	10534	4207	2360	2115	245	0.0233	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	22	13	2015	-	2115	2080	35	0.0174	0.035	0.035	25	5	2
Area 3A	30	31	13305	7112	3540	2430	1110	0.0834	0.035	-	-	-	-
Stream Route	31	32	8810	-	2430	2175	255	0.0289	-	0.035	25	5	2
Area 3B	31.1	32	14765	8380	2440	2175	265	0.0179	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	32	33	7538	-	2175	2060	115	0.0153	-	0.035	25	5	2
Area 3C	32.1	33	11196	4891	2280	2060	220	0.0196	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Area 4A	40	41	17608	8024	4480	2840	1640	0.0931	0.035	-	-	-	-
Stream Route	41	42	14501	-	2840	2160	680	0.0469	-	0.035	25	5	2
Area 4B	41.1	42	17734	9145	3520	2160	1360	0.0767	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	42	43	6831	-	2160	2060	100	0.0146	-	0.035	25	5	2
Area 4C	42.1	43	13754	9447	2600	2060	540	0.0393	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-

Stirling Energy Systems, Inc
Solar One, LLC
Hector Mine, San Bernardino County, California
Stantec Consulting Proj. No. 2000024301
Initial Hydrology Study
Drainage area size and length

Date:	10/30/2008	By:	klt
Date Checked:	10/31/2008	By:	cpp
Date Revised:		By:	

Basin	Upstream Node	Downstream Node	Flowpath Length	Distance to Centroid	Elev Top	Flowpath Elev Bottom	Flowpath Elev Change	Flowpath Flowpath Slope	Basin Factor Coef	Mannings' n	Channel Base	Channel Z factor	Channel Depth
	-	-	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	-	-	(ft)	-	(ft)
Area 4A	40	51	17608	8024	4480	2815	1640	0.093139	0.035	-	-	-	-
Stream Route	51	52	12788	-	2815	2180	680	0.046893	-	0.035	25	5	2
Area 5B	51.1	52	12315	7765	3200	2180	1360	0.076689	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	52	53	6652	-	2180	2065	100	0.014639	-	0.035	25	5	2
Area 5C	52.1	53	19986	11194	2600	2065	540	0.039261	-	0.035	25	5	2
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Area 6A	60	61	12315	6295	4600	2680	1920	0.1559	0.035	-	-	-	-
Stream Route	61	62	3994	-	2680	2470	210	0.0526	-	0.035	25	5	2
Area 6B	61.1	62	6851	3676	3140	2470	670	0.0978	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Area 6C	63	64	10679	5228	5000	2680	2320	0.2172	0.035	-	-	-	-
Stream Route	64	62	3660	-	2680	2470	210	0.0574	-	0.035	25	5	2
Area 6D	64.1	62	5484	2605	3160	2470	690	0.1258	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	62	65	6766	-	2470	2180	290	0.0429	-	0.035	25	5	2
Area 6E	62.1	65	14432	6135	3200	2180	1020	0.0707	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	65	66	6805	-	2180	2040	140	0.0206	-	0.035	25	5	2
Area 6F	65.1	66	7968	4691	2220	2040	180	0.0226	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Area 6G	67	68	6479	3472	3160	2670	490	0.0756	0.035	-	-	-	-
Stream Route	68	69	9751	-	2670	2180	490	0.0503	-	0.035	25	5	2
Area 6H	68.1	69	11295	5893	2900	2180	720	0.0637	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	69	66	6588	-	2180	2040	140	0.0213	-	0.035	25	5	2
Area 6I	69.1	66	10093	5800	2180	2040	140	0.0139	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	66	66.5	1241	-	2040	2000	40	0.0322	-	0.035	25	5	2
Area 6J	66.1	66.5	7902	1114	2160	2000	160	0.0202	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-

Stirling Energy Systems, Inc
Solar One, LLC
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Stantec Consulting Proj. No. 2000024301
Initial Hydrology Study

Date: 10/30/2008 By: klt
Date Checked: 10/31/2008 By: cpp
Date Revised: By:

Drainage area size and length

Basin	Upstream Node	Downstream Node	Flowpath Length (ft)	Distance to Centroid (ft)	Elev Top (ft)	Flowpath Elev Bottom (ft)	Flowpath Elev Change (ft)	Flowpath Flowpath Slope (ft/ft)	Basin Factor Coef	Mannings' n	Channel Base (ft)	Channel Z factor	Channel Depth (ft)
	-	-							-	-		-	
Area 7A	70	71	7740	4234	3040	2570	470	0.0607	0.035	-	-	-	-
Stream Route	71	72	6913	-	2570	2200	370	0.0535	-	0.035	25	5	2
Area 7B	71.1	72	8964	4687	2880	2200	680	0.0759	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	72	73	6313	-	2200	2050	150	0.0238	-	0.035	25	5	2
Area 7C	72.1	73	8809	4662	2400	2050	350	0.0397	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	73	74	728	-	2050	2030	20	0.0275	-	0.035	25	5	2
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Area 7D	75	76	12625	5849	3040	2500	540	0.0428	0.035		-	-	-
Stream Route	76	77	6103	-	2500	2180	320	0.0524	-	0.035	25	5	2
Area 7E	76.1	77	7602	4050	2960	2180	780	0.1026	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	77	78	5723	-	2180	2050	130	0.0227	-	0.035	25	5	2
Area 7F	77.1	78	12003	6262	2525	2050	475	0.0396	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	78	74	425	-	2050	2030	20	0.0471	-	0.035	25	5	2
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	74	79	3032	-	2030	1960	70	0.0231	-	0.035	25	5	2
Area 7G	74.1	79	12866	7337	2360	1960	400	0.0311	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Area 8A	80	81	13409	6657	3220	2150	1070	0.0798	0.035	-	-	-	-
Stream Route	81	82	8111	-	2150	1937	213	0.0263	-	0.035	25	5	2
Area 8B	81.1	82	19314	9077	3220	1937	1283	0.0664	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Area 9A	90	91	26139	12633	4160	2290	1870	0.0715	0.035	-	-	-	-
Stream Route	91	92	12536	-	2290	1180	1110	0.0885	-	0.035	25	5	2
Area 9B	91.1	92	39166	18246	3520	1880	1640	0.0419	0.035	-	-	-	-
Combine Hydrographs	-	-	-	-	-	-	-	-	-	-	-	-	-
Stream Route	92	93	2347	-	1880	1845	35	0.0149	-	0.035	25	5	2
Area 9C	92.1	93	15967	10526	2125	1845	280	0.017536	0.035	-	-	-	-
Combine Hydrographs													

Stirling Energy Systems, Inc				Date:	10/21/08	By:	cvg
Solar One, LLC				Date Checked:		By:	
Hector Mine, San Bernardino County, California				Date Revised:		By:	
Stantec Consulting Proj. No. 200002430							
Initial Hydrology Study							
Drainage area size and length							
				Flowpath	Flowpath	Flowpath	
	Flowpath	Distance to	Elev	Elev	Elev	Flowpath	Roughness
	Length	Centroid	Top	Bottom	Change	Slope	Coef
Basin	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	
480	10151	6367	2195.00	2065.00	130.00	0.0128	0.050
490	4,191	1,376	2,283	2,187	95.85	0.0229	0.040
500	24,948	8,520	2,900	2,123	777.00	0.0311	0.040
510	5,635	2,271	2,325	2,201	124.00	0.0220	0.040
520	4,500	2,069	2,201	2,165	36.00	0.0080	0.040
530	10,308	4,916	2,538	2,161	377.00	0.0366	0.086
540	17,024	11,089	2,538	2,080	458.00	0.0269	0.068
550	11,492	5,411	2,123	2,013	110.00	0.0096	0.040
560	4,636	2,021	2,165	2,063	102.00	0.0220	0.040
570	5,001	2,473	2,165	2,050	115.00	0.0230	0.040
590	6,016	3,668	2,165	1,965	200.00	0.0332	0.040
600	8,380	3,358	2,160	1,945	215.00	0.0257	0.040
610	5,129	2,520	2,080	1,925	155.00	0.0302	0.040
620	5,831	2,833	2,070	1,905	165.00	0.0283	0.040
630	2,094	935	2,000	1,923	77.00	0.0368	0.040
650	36,362	22,020	2,125	1,860	265.00	0.0073	0.046
660	7,964	3,311	2,050	1,913	137.00	0.0172	0.040
670	3,919	3,541	1,941	1,911	30.00	0.0077	0.040
680	9,519	4,686	2,005	1,870	135.00	0.0142	0.040
720	6,384	2,141	1,905	1,825	80.00	0.0125	0.044
730	6,748	3,299	1,835	1,800	35.00	0.0052	0.040
740	4,153	2,854	1,825	1,803	22.00	0.0053	0.040
750	2,909	1,384	1,925	1,893	32.00	0.0110	0.040
760	4,261	3,341	1,893	1,860	33.00	0.0077	0.040
770	4,272	1,686	1,870	1,835	35.00	0.0082	0.040
780	8,343	4,684	2,063	1,941	122.00	0.0146	0.040

Stirling Energy Systems, Inc
Solar One, LLC
Hector Mine, San Bernardino County, California
Stantec Consulting Proj. No. 200002430
Initial Hydrology Study

Date: 10/21/08 By: aml
Date Checked: By:
Date Revised: By:

Interstate 40 Culverts - Equivalent Pipe Diameters

Node Locations US	Node Locations DS		Culvert	Description	Span (feet)	Rise (feet)	Diameter (feet)	Length (feet)	Overall Length (feet)	Waterway Area (sq feet)	Equivalent Diameter (feet)	Source[1]
514	516		32	Round			3	53	182		3	
			33	Round			3	55				
494	496		34	Pipe Arch			3	55	186		3	
			35	Pipe Arch			3	53				
NOT	Considered		28	Pipe Arch	5	3.5		59	187	14.7	4.5	Table 1-16
			29	Pipe Arch	5	3.5		61				
484	486		26	Round			2	58	189		3	
			27	Round			3	63				
544	546		24	Pipe Arch			3.5	91	215		3.5	
			25	Pipe Arch			3.5	82				
564	566		17	Pipe Arch	9	6.3		61	189	48	8	Table 1-17
			18	Pipe Arch	9	6.3		59				
574	576	Grouped Together	15	Round			4	60	187		4	
			16	Round			4	69				
			13	Round			4	58	187		4	
			14	Round			4	67				
			11	Pipe Arch	5	3.3		56	186	14.7	4.5	Table 1-16
			12	Pipe Arch	5	3.3		59			4.5	

Stirling Energy Systems, Inc
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Initial Hydrology Study

Date: 10/21/08 By: aml
Date Checked: By:
Date Revised: By:

Interstate 40 Culverts - Equivalent Pipe Diameters

Node Locations US	DS	Culvert	Description	Span feet	Rise feet	Diameter feet	Length feet	Overall Length feet	Waterway Area sq feet	Equivalent Diameter feet	Source[1]
NOT	Considered	9	Round			3.5	68	186		3.5	
		10	Round			3.5	52				
594	596	7	Pipe Arch	8.5	6		56	187	42.4	7.5	Table 1-17
		8	Pipe Arch	8.5	4.2		58				
604	606	5	Pipe Arch	13.5	8.5		55	181	93	10.9	Table 1-22
		6	Pipe Arch	13.5	8.5		54				
614	616	22	Pipe Arch	6	5		63	190	21.9	5.5	Table 1-16
		23	Pipe Arch	6	5		54				
634	636	20 or 3	Pipe Arch	6	5		108	282	21.9	5.5	Table 1-16
		21	Pipe Arch	6	5		108				
624	626	1	Box	6	5		91	244	30	6.2	
		2	Box	6	5		94				

[1] **American Iron and Steel Institute, 1983, Handbook of Steel Drainage & Highway Construction Products: Third Edition**

Stirling Energy Systems, Inc
Solar One, LLC
Hector Mine, San Bernardino County, California
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Initial Hydrology Study

Date: 10/21/08	By: aml
Date Checked:	By:
Date Revised:	By:

Trestle Equivalent Pipe Diameters

Node Locations		Trestle	Span	Rise	Area	Equivalent Diameter
US	DS		feet	feet	sq feet	feet
504	506	1	12.7	4.9	62.23	8.90
551	552	2	38	4.67	177.46	15.03
-	-	3	14	3	42	7.31
781	782	4	68	4.5	306	19.74
783	784	5	17.25	4	69	9.37
785	786	6	31	8	248	17.77
787	788	7	26	3.78	98.28	11.19
676	678	8	39.67	6.25	247.94	17.77
696	698	9	42	2	84	10.34
-	-	10	55.25	6.5	359.13	21.38

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Rainfall / Runoff Losses

25 – Year Event

Stirling Energy Systems, Inc
Solar One, LLC
Hector Mine, San Bernardino County, California
Stantec Consulting Proj. No. 2000024301
Initial Hydrology Study

Date: 10/10/08 By: cvg
Date Checked: 10/24/08 By: cpp
Date Revised: 10/24/08 By: cpp
Date Revised: 11/06/08 By: cvg

Rainfall / Runoff Losses

Watershed type	curve number C	Soil Capacity S	Initial Abst Ia	Storm runoff yield Yj	Pervious area infilt rate Fp	Notes
Type 1 - Alluvial Fan / Plain	83	2.05	0.41	0.47	0.33	1,3,4,5,6
Type 2 - Mountain Area	91	0.99	0.20	0.68	0.18	2,3,4,5,6
Type 3 - Lava Flow Area						
Type 4 - other area						

Antecedent Moisture Condition - AMC II

Basin	Type 1 Area (acres)	Type 2 Area (acres)	Type 3 Area (acres)	Type 4 Area (acres)	Total Area (acres)	Weighted Storm runoff yield Yj	Catchment low loss fraction Ybar	Weighted Pervious area infilt rate Fp	Pervious area Fraction Ap	Catchment Maximum Loss Rate Fm
Area 1A	1076	26	0	0	1101.6	0.47	0.53	0.33	1	0.33
Area 1B	304	0	0	0	304.5	0.47	0.53	0.33	1	0.33
Area 1C	293	0	0	0	292.9	0.47	0.53	0.33	1	0.33
Area 2A	599	318	0	0	916.7	0.54	0.46	0.28	1	0.28
Area 2B	272	0	0	0	271.6	0.47	0.53	0.33	1	0.33
Area 3A	428	569	0	0	997.1	0.59	0.41	0.24	1	0.24
Area 3B	761	0	0	0	760.7	0.47	0.53	0.33	1	0.33
Area 3C	310	0	0	0	310.3	0.47	0.53	0.33	1	0.33
Area 4A	96	1590	0	0	1686.5	0.67	0.33	0.19	1	0.19
Area 4B	665	160	0	0	825.7	0.51	0.49	0.30	1	0.30
Area 4C	549	0	0	0	548.7	0.47	0.53	0.33	1	0.33
Area 4A	96	1590	0	0	1686.5	0.67	0.33	0.19	1	0.19
Area 5B	429	23	0	0	452.1	0.48	0.52	0.32	1	0.32
Area 5C	495	0	0	0	494.6	0.47	0.53	0.33	1	0.33
Area 6A	38	1388	0	0	1425.9	0.68	0.32	0.18	1	0.18
Area 6B	83	24	0	0	106.5	0.52	0.48	0.30	1	0.30
Area 6C	13	353	0	0	366.3	0.67	0.33	0.19	1	0.19
Area 6D	89	4	0	0	93.4	0.48	0.52	0.32	1	0.32
Area 6E	344	9	0	0	353.0	0.48	0.52	0.33	1	0.33
Area 6F	166	0	0	0	166.2	0.47	0.53	0.33	1	0.33
Area 6G	24	230	0	0	254.3	0.66	0.34	0.19	1	0.19
Area 6H	529	27	0	0	555.5	0.48	0.52	0.32	1	0.32
Area 6I	246	0	0	0	245.6	0.47	0.53	0.33	1	0.33
Area 6J	166	0	0	0	166.2	0.47	0.53	0.33	1	0.33
Area 7A	8	283	0	0	291.0	0.68	0.32	0.18	1	0.18
Area 7B	302	26	0	0	327.9	0.49	0.51	0.32	1	0.32
Area 7C	246	0	0	0	245.9	0.47	0.53	0.33	1	0.33
Area 7D	487	0	0	0	486.5	0.47	0.53	0.33	1	0.33
Area 7E	117	188	0	0	304.5	0.60	0.40	0.24	1	0.24
Area 7F	270	33	0	0	303.6	0.49	0.51	0.31	1	0.31
Area 7G	442	0	0	0	442.1	0.47	0.53	0.33	1	0.33
Area 8A	65	286	0	0	351.3	0.64	0.36	0.21	1	0.21
Area 8B	804	265	0	0	1069.6	0.52	0.48	0.29	1	0.29
Area 9A	70	1355	0	0	1425.9	0.67	0.33	0.19	1	0.19
Area 9B	1389	2358	0	0	3746.6	0.60	0.40	0.24	1	0.24
Area 9C	1558	0	0	0	1557.8	0.47	0.53	0.33	1	0.33

Notes:
(1) assume open brush, poor cover, type B soil
(2) assume barren, rockland, type D soil
(3) average rainfall is the 25-yr/24-hr depth (in)
(4) F_p based on AMC II
(5) curve number based on SBFCD Hydrology Manual Figure C-8; desert brush cover complex
(6) cover density assumed at 20%

Stirling Energy Systems, Inc					Date:	10/21/08	By:	cvg
Solar One, LLC					Date Checked:		By:	
Hector Mine, San Bernardino County, California					Date Revised:		By:	
Stantec Consulting Proj. No. 200002430								
Initial Hydrology Study								
Rainfall / Runoff Losses		25-year, 24-hour						

				Storm	Pervious			Cover 0-20%	
		curve	Soil	Initial	runoff	area		P_{24} =	2.89
		number	Capacity	Abst	yield	infilt rate			
Watershed type		C	S	Ia	Yj	Fp	Notes		
Type 1 - Alluvial Fan / Plain		82	2.20	0.44	0.45	0.34	1		
Type 2 - Mountain Area		92	0.87	0.17	0.71	0.16	2		
Type 3 - Lava Flow Area		90	1.11	0.22	0.65	0.2			
Type 4 - other area									

Antecedent Moisture Condition - AMC II

Basin	Type 1 Area (acres)	Type 2 Area (acres)	Type 3 Area (acres)	Type 4 Area (acres)	Total Area (acres)	Weighted Storm runoff yield Yj	Catchment low loss fraction Ybar	Weighted Pervious area infilt rate Fp	Pervious area Fraction Ap	Catchment Maximum Loss Rate Fm
480	306		64		370.0	0.48	0.52	0.32	1	0.32
490	83				83.0	0.45	0.55	0.34	1	0.34
500	2,011	462			2473.0	0.50	0.50	0.31	1	0.31
510	102				101.7	0.45	0.55	0.34	1	0.34
520	158				157.7	0.45	0.55	0.34	1	0.34
530	154		501		655.2	0.60	0.40	0.23	1	0.23
540	1,287		1,095		2382.0	0.54	0.46	0.28	1	0.28
550	1,937				1936.6	0.45	0.55	0.34	1	0.34
560	155				155.3	0.45	0.55	0.34	1	0.34
570	223				223.5	0.45	0.55	0.34	1	0.34
590	207				207.5	0.45	0.55	0.34	1	0.34
600	497				496.9	0.45	0.55	0.34	1	0.34
610	202				201.7	0.45	0.55	0.34	1	0.34
620	103				103.5	0.45	0.55	0.34	1	0.34
630	46				45.7	0.45	0.55	0.34	1	0.34
650	2,943		340		3283.0	0.47	0.53	0.33	1	0.33
660	361				361.4	0.45	0.55	0.34	1	0.34
670	142				141.8	0.45	0.55	0.34	1	0.34
680	786				785.8	0.45	0.55	0.34	1	0.34
720	791		62		853.4	0.46	0.54	0.33	1	0.33
730	199				198.9	0.45	0.55	0.34	1	0.34
740	247		41		288.0	0.48	0.52	0.32	1	0.32
750	114				113.7	0.45	0.55	0.34	1	0.34
760	205				204.8	0.45	0.55	0.34	1	0.34
770	239				239.3	0.45	0.55	0.34	1	0.34
780	895				894.7	0.45	0.55	0.34	1	0.34

Notes:
(1) assume open brush, poor cover, type B soil
(2) assume barren, rockland, type C/D soil

100 – Year Event

Stirling Energy Systems, Inc
Solar One, LLC
Hector Mine, San Bernardino County, California
Stantec Consulting Proj. No. 2000024301
Initial Hydrology Study

Date:	10/10/08	By:	cvg
Date Checked:	10/24/08	By:	cpp
Date Revised:	10/24/08	By:	cpp

Rainfall / Runoff Losses

Watershed type	curve number C	Soil Capacity S	Initial Abst Ia	Storm runoff yield Yj	Pervious area infilt rate Fp	Notes
Type 1 - Alluvial Fan / Plain	83	2.05	0.41	0.56	0.33	1,3,4,5,6
Type 2 - Mountain Area	91	0.99	0.20	0.74	0.18	2,3,4,5,6
Type 3 - Lava Flow Area						
Type 4 - other area						

Antecedent Moisture Condition - AMC II

Basin	Type 1 Area (acres)	Type 2 Area (acres)	Type 3 Area (acres)	Type 4 Area (acres)	Total Area (acres)	Weighted Storm runoff yield Yj	Catchment low loss fraction Ybar	Weighted Pervious area infilt rate Fp	Pervious area Fraction Ap	Catchment Maximum Loss Rate Fm
Area 1A	1076	26	0	0	1101.6	0.56	0.44	0.33	1	0.33
Area 1B	304	0	0	0	304.5	0.56	0.44	0.33	1	0.33
Area 1C	293	0	0	0	292.9	0.56	0.44	0.33	1	0.33
Area 2A	599	318	0	0	916.7	0.62	0.38	0.28	1	0.28
Area 2B	272	0	0	0	271.6	0.56	0.44	0.33	1	0.33
Area 3A	428	569	0	0	997.1	0.66	0.34	0.24	1	0.24
Area 3B	761	0	0	0	760.7	0.56	0.44	0.33	1	0.33
Area 3C	310	0	0	0	310.3	0.56	0.44	0.33	1	0.33
Area 4A	96	1590	0	0	1686.5	0.73	0.27	0.19	1	0.19
Area 4B	665	160	0	0	825.7	0.59	0.41	0.30	1	0.30
Area 4C	549	0	0	0	548.7	0.56	0.44	0.33	1	0.33
Area 4A	96	1590	0	0	1686.5	0.73	0.27	0.19	1	0.19
Area 5B	429	23	0	0	452.1	0.57	0.43	0.32	1	0.32
Area 5C	495	0	0	0	494.6	0.56	0.44	0.33	1	0.33
Area 6A	38	1388	0	0	1425.9	0.74	0.26	0.18	1	0.18
Area 6B	83	24	0	0	106.5	0.60	0.40	0.30	1	0.30
Area 6C	13	353	0	0	366.3	0.74	0.26	0.19	1	0.19
Area 6D	89	4	0	0	93.4	0.56	0.44	0.32	1	0.32
Area 6E	344	9	0	0	353.0	0.56	0.44	0.33	1	0.33
Area 6F	166	0	0	0	166.2	0.56	0.44	0.33	1	0.33
Area 6G	24	230	0	0	254.3	0.73	0.27	0.19	1	0.19
Area 6H	529	27	0	0	555.5	0.57	0.43	0.32	1	0.32
Area 6I	246	0	0	0	245.6	0.56	0.44	0.33	1	0.33
Area 6J	166	0	0	0	166.2	0.56	0.44	0.33	1	0.33
Area 7A	8	283	0	0	291.0	0.74	0.26	0.18	1	0.18
Area 7B	302	26	0	0	327.9	0.57	0.43	0.32	1	0.32
Area 7C	246	0	0	0	245.9	0.56	0.44	0.33	1	0.33
Area 7D	487	0	0	0	486.5	0.56	0.44	0.33	1	0.33
Area 7E	117	188	0	0	304.5	0.67	0.33	0.24	1	0.24
Area 7F	270	33	0	0	303.6	0.58	0.42	0.31	1	0.31
Area 7G	442	0	0	0	442.1	0.56	0.44	0.33	1	0.33
Area 8A	65	286	0	0	351.3	0.71	0.29	0.21	1	0.21
Area 8B	804	265	0	0	1069.6	0.60	0.40	0.29	1	0.29
Area 9A	70	1355	0	0	1425.9	0.73	0.27	0.19	1	0.19
Area 9B	1389	2358	0	0	3746.6	0.67	0.33	0.24	1	0.24
Area 9C	1558	0	0	0	1557.8	0.56	0.44	0.33	1	0.33

Notes:
(1) assume open brush, poor cover, type B soil
(2) assume barren, rockland, type D soil
(3) average rainfall is the 100-yr/24-hr depth (in)
(4) F_p based on AMC II
(5) curve number based on SBFCD Hydrology Manual Figure C-8; desert brush cover complex
(6) cover density assumed at 20%

							Date:	10/21/08	By:	cvg
Stirling Energy Systems, Inc										
Solar One, LLC							Date Checked:		By:	
Hector Mine, San Bernardino County, California							Date Revised:		By:	
Stantec Consulting Proj. No. 200002430										
Initial Hydrology Study										
Rainfall / Runoff Losses				100-year, 24-hour						
					Storm	Pervious			Cover 0-20%	
		curve	Soil	Initial	runoff	area			P_{24} =	3.80
		number	Capacity	Abst	yield	infilt rate				
Watershed type		C	S	Ia	Yj	Fp	Notes			
Type 1 - Alluvial Fan / Plain		82	2.20	0.44	0.54	0.34	1			
Type 2 - Mountain Area		92	0.87	0.17	0.77	0.16	2			
Type 3 - Lava Flow Area		90	1.11	0.22	0.72	0.2				
Type 4 - other area										
Antecedent Moisture Condition - AMC II										

Basin	Type 1 Area (acres)	Type 2 Area (acres)	Type 3 Area (acres)	Type 4 Area (acres)	Total Area (acres)	Weighted Storm runoff yield Yj	Catchment low loss fraction Ybar	Weighted Pervious area infilt rate Fp	Pervious area Fraction Ap	Catchment Maximum Loss Rate Fm
480	306		64		370.0	0.57	0.43	0.32	1	0.32
490	83				83.0	0.54	0.46	0.34	1	0.34
500	2,011	462			2473.0	0.58	0.42	0.31	1	0.31
510	102				101.7	0.54	0.46	0.34	1	0.34
520	158				157.7	0.54	0.46	0.34	1	0.34
530	154		501		655.2	0.68	0.32	0.23	1	0.23
540	1,287		1,095		2382.0	0.62	0.38	0.28	1	0.28
550	1,937				1936.6	0.54	0.46	0.34	1	0.34
560	182				181.7	0.54	0.46	0.34	1	0.34
570	160				160.5	0.54	0.46	0.34	1	0.34
590	207				207.5	0.54	0.46	0.34	1	0.34
600	497				496.9	0.54	0.46	0.34	1	0.34
610	202				201.7	0.54	0.46	0.34	1	0.34
620	103				103.5	0.54	0.46	0.34	1	0.34
630	46				45.7	0.54	0.46	0.34	1	0.34
650	2,943		340		3283.0	0.55	0.45	0.33	1	0.33
660	361				361.4	0.54	0.46	0.34	1	0.34
670	142				141.8	0.54	0.46	0.34	1	0.34
680	786				785.8	0.54	0.46	0.34	1	0.34
720	791		62		853.4	0.55	0.45	0.33	1	0.33
730	199				198.9	0.54	0.46	0.34	1	0.34
740	247		41		288.0	0.56	0.44	0.32	1	0.32
750	114				113.7	0.54	0.46	0.34	1	0.34
760	205				204.8	0.54	0.46	0.34	1	0.34
770	239				239.3	0.54	0.46	0.34	1	0.34
780	895				894.7	0.54	0.46	0.34	1	0.34

Notes:
(1) assume open brush, poor cover, type B soil
(2) assume barren, rockland, type C/D soil

Rainfall

Date: By: cvg
Date Checked: 10/15/08 By: cpp
Date Revised: 10/15/08 By: klt

Rainfall

Rainfall values required to synthesize the unit hydrograph

Duration	Rainfall (in)		
	10-year	25-year	100-year
5 min	0.29	0.39	0.57
30 min	0.74	0.99	1.45
60 min	0.92	1.22	1.80
3 hours	*1.32*	*1.68*	2.33
6 hours	*1.70*	*2.15*	2.89
24 hours	*2.33*	*2.89*	3.80

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Advanced Engineering Software

Output Summary Reports

25 – Year Event

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******************************************************************************

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              Ver. 15.0  Release Date: 04/01/2008  License ID 1535

                           Analysis prepared by:

                                 Stantec



------------------------------------------------------------------------------
  FILE NAME: 25YAREA2.DAT
  TIME/DATE OF STUDY: 16:54 11/06/2008

                          ** INPUT SUMMARY **

******************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     21.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
==============================================================================
  WATERCOURSE LENGTH =   18323.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   10424.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     600.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     917.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.280; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.90; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.959; 30-MINUTE = 0.959;  1-HOUR = 0.959
    3-HOUR = 0.994;    6-HOUR = 0.997; 24-HOUR = 0.998

******************************************************************************
  FLOW PROCESS FROM NODE     21.00 TO NODE     22.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2200.00; DOWNSTREAM ELEVATION(FT) =    2030.00
  CHANNEL LENGTH(FT) =    4290.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     21.10 TO NODE     22.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
==============================================================================
  WATERCOURSE LENGTH =   10534.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4207.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     330.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     272.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.988; 30-MINUTE = 0.988;  1-HOUR = 0.988
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999

******************************************************************************
  FLOW PROCESS FROM NODE     22.00 TO NODE     13.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).
```

```
  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2030.00; DOWNSTREAM ELEVATION(FT) =    2000.00
  CHANNEL LENGTH(FT) =    2015.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   16770.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   10882.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     660.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1102.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.951; 30-MINUTE = 0.951;  1-HOUR = 0.951
    3-HOUR = 0.993;    6-HOUR = 0.996; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     11.00 TO NODE     12.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2160.00; DOWNSTREAM ELEVATION(FT) =    2093.00
  CHANNEL LENGTH(FT) =    6270.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     11.10 TO NODE     12.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   14475.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5830.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     347.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     304.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.986; 30-MINUTE = 0.986;  1-HOUR = 0.986
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     13.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2093.00; DOWNSTREAM ELEVATION(FT) =    2080.00
  CHANNEL LENGTH(FT) =    1318.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     12.10 TO NODE     13.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    9221.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5830.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     160.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     293.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.987; 30-MINUTE = 0.987;  1-HOUR = 0.987
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [25ya2.dna                    ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [25YAREA2.DAT]   Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
20.00	21.00	Subarea (UH) Added to Stream #1	0.0	1038.1	16.583		
21.00	22.00	Convex Routing: Stream #1	1038.1	1035.3	16.833		
21.10	22.00	Subarea (UH) Added to Stream #1	1035.3	1210.0	16.750		
22.00	13.00	Convex Routing: Stream #1	1210.0	1180.7	16.833		
10.00	11.00	Subarea (UH) Added to Stream #2	0.0	913.2	16.583		
11.00	12.00	Convex Routing: Stream #2	913.2	904.7	16.917		
11.10	12.00	Subarea (UH) Added to Stream #2	904.7	1102.1	16.750		
12.00	13.00	Convex Routing: Stream #2	1102.1	1071.7	16.750		
13.00	13.00	Stream #2 Added to: Stream #1	1180.7	2248.0	16.833		
13.00	13.00	View: Stream #1		2248.0	16.833	380.86	3
12.10	13.00	Subarea (UH) Added to Stream #3	0.0	300.3	16.333		
13.00	13.00	Stream #3 Added to: Stream #1	2248.0	2422.0	16.750		
13.00	13.00	View: Stream #1		2422.0	16.750	425.39	3
13.00	13.00	Store: Stream #1	2422.0	2422.0	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

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             Ver. 15.0  Release Date: 04/01/2008  License ID 1535

                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: 25YAREA3.DAT
  TIME/DATE OF STUDY: 16:04 11/04/2008


                         ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   13305.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    7112.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1110.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     997.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.240; LOW LOSS FRACTION = 0.410
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.955; 30-MINUTE = 0.955;  1-HOUR = 0.955
    3-HOUR = 0.993;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     32.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2430.00; DOWNSTREAM ELEVATION(FT) =    2175.00
  CHANNEL LENGTH(FT) =    8810.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     31.10 TO NODE     32.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   14765.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    8380.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     265.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     761.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.966; 30-MINUTE = 0.966;  1-HOUR = 0.966
    3-HOUR = 0.995;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     33.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2175.00; DOWNSTREAM ELEVATION(FT) =    2060.00
  CHANNEL LENGTH(FT) =    7538.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     32.10 TO NODE     33.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   11196.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4891.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     220.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     310.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.986; 30-MINUTE = 0.986;  1-HOUR = 0.986
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     33.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     33.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     33.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [25ya3                          ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [25YAREA3.DAT   ]   Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
30.00	31.00	Subarea (UH) Added to Stream #1	0.0	1102.5	16.333		
31.00	32.00	Convex Routing: Stream #1	1102.5	1081.2	16.667		
31.10	32.00	Subarea (UH) Added to Stream #2	0.0	641.6	16.583		
32.00	32.00	Stream #2 Added to: Stream #1	1081.2	1722.8	16.667		
32.00	32.00	View: Stream #1		1722.8	16.667	269.33	3
32.00	32.00	Zero Out: Stream #2	641.6	0.0			
32.00	33.00	Convex Routing: Stream #1	1722.8	1657.5	16.833		
32.10	33.00	Subarea (UH) Added to Stream #2	0.0	318.3	16.333		
33.00	33.00	Stream #2 Added to: Stream #1	1657.5	1791.4	16.833		

33.00	33.00	View:	Stream #1		1791.4	16.833	313.09	3
33.00	33.00	Store:	Stream #1	1791.4	1791.4	16.833		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

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                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: 25YAREA4.DAT
  TIME/DATE OF STUDY: 16:05 11/04/2008


                         ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     40.00 TO NODE     41.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   17608.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    8024.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1640.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1687.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.330
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.925; 30-MINUTE = 0.925;  1-HOUR = 0.925
    3-HOUR = 0.989;    6-HOUR = 0.994; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE     41.00 TO NODE     42.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2840.00; DOWNSTREAM ELEVATION(FT) =    2160.00
  CHANNEL LENGTH(FT) =  10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     41.10 TO NODE     42.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   17734.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    9145.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1360.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     826.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.300; LOW LOSS FRACTION = 0.490
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.963; 30-MINUTE = 0.963;  1-HOUR = 0.963
    3-HOUR = 0.994;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     43.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2160.00; DOWNSTREAM ELEVATION(FT) =    2060.00
  CHANNEL LENGTH(FT) =    6831.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     42.10 TO NODE     43.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   13754.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    9447.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     540.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     549.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.975; 30-MINUTE = 0.975;  1-HOUR = 0.975
    3-HOUR = 0.996;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [25ya4                          ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [25YAREA4.DAT] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
40.00	41.00	Subarea (UH) Added to	Stream #1	0.0	1737.5	16.333		
41.00	42.00	Convex Routing:	Stream #1	1737.5	1716.0	16.583		
41.10	42.00	Subarea (UH) Added to	Stream #2	0.0	758.5	16.333		
42.00	42.00	Stream #2 Added to:	Stream #1	1716.0	2407.8	16.583		
42.00	42.00	View:	Stream #1		2407.8	16.583	421.17	3
42.00	42.00	Zero Out:	Stream #2	758.5	0.0			
42.00	43.00	Convex Routing:	Stream #1	2407.8	2370.7	16.833		
42.10	43.00	Subarea (UH) Added to	Stream #2	0.0	480.5	16.333		
43.00	43.00	Stream #2 Added to:	Stream #1	2370.7	2828.8	16.750		

43.00	43.00	View:	Stream #1		2828.8	16.750	498.34	3
43.00	43.00	Store:	Stream #1	2828.8	2828.8	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

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                         Analysis prepared by:

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----------------------------------------------------------------------------
  FILE NAME: 25YAREA5.DAT
  TIME/DATE OF STUDY: 16:05 11/04/2008


                          ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     40.00 TO NODE     51.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   17608.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    8024.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1640.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1687.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.330
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.925; 30-MINUTE = 0.925;  1-HOUR = 0.925
    3-HOUR = 0.989;    6-HOUR = 0.994; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE     51.00 TO NODE     52.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2815.00; DOWNSTREAM ELEVATION(FT) =    2180.00
  CHANNEL LENGTH(FT) =  10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     51.10 TO NODE     52.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   12315.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    7765.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1360.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     452.100 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.520
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.980; 30-MINUTE = 0.980;  1-HOUR = 0.980
    3-HOUR = 0.997;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     52.00 TO NODE     52.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     52.00 TO NODE     52.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     52.00 TO NODE     52.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     52.00 TO NODE     53.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2180.00; DOWNSTREAM ELEVATION(FT) =    2065.00
  CHANNEL LENGTH(FT) =    6652.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     52.10 TO NODE     53.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   19986.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   11194.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     540.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     495.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.978; 30-MINUTE = 0.978;  1-HOUR = 0.978
    3-HOUR = 0.997;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [25ya5.dna                     ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [25YAREA5.DAT   ] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
40.00	51.00	Subarea (UH) Added to Stream #1	0.0	1737.5	16.333		
51.00	52.00	Convex Routing: Stream #1	1737.5	1714.3	16.583		
51.10	52.00	Subarea (UH) Added to Stream #2	0.0	495.5	16.333		
52.00	52.00	Stream #2 Added to: Stream #1	1714.3	2117.3	16.500		
52.00	52.00	View: Stream #1		2117.3	16.500	363.70	3
52.00	52.00	Zero Out: Stream #2	495.5	0.0			
52.00	53.00	Convex Routing: Stream #1	2117.3	2030.1	16.750		
52.10	53.00	Subarea (UH) Added to Stream #2	0.0	410.1	16.583		
53.00	53.00	Stream #2 Added to: Stream #1	2030.1	2440.2	16.750		

53.00	53.00	View:	Stream #1		2440.2	16.750	433.35	3
53.00	53.00	Store:	Stream #1	2440.2	2440.2	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

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****************************************************************************

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                           Analysis prepared by:

                                  Stantec



----------------------------------------------------------------------------
  FILE NAME: 25YAREA6.DAT
  TIME/DATE OF STUDY: 16:06 11/04/2008


                          ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     60.00 TO NODE     61.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   12315.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6295.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1920.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1426.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.180; LOW LOSS FRACTION = 0.320
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.936; 30-MINUTE = 0.936;  1-HOUR = 0.936
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE     61.00 TO NODE     62.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2680.00; DOWNSTREAM ELEVATION(FT) =    2470.00
  CHANNEL LENGTH(FT) =    3994.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     61.10 TO NODE     62.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    6851.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3676.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     670.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     107.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.300; LOW LOSS FRACTION = 0.520
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     63.00 TO NODE     64.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   10679.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5228.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    2320.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     366.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.330
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     64.00 TO NODE     62.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2680.00; DOWNSTREAM ELEVATION(FT) =    2470.00
  CHANNEL LENGTH(FT) =    3660.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     64.10 TO NODE     62.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    5484.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2605.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     690.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =      93.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.520
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.996; 30-MINUTE = 0.996;  1-HOUR = 0.996
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
```

```
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     65.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2470.00; DOWNSTREAM ELEVATION(FT) =    2180.00
  CHANNEL LENGTH(FT) =    6766.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.10 TO NODE     65.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   14432.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6135.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1020.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     353.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.520
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     65.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     65.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     65.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     66.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2180.00; DOWNSTREAM ELEVATION(FT) =    2040.00
  CHANNEL LENGTH(FT) =    6805.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
```

```
  FLOW PROCESS FROM NODE     65.10 TO NODE     66.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERCOURSE LENGTH =    7968.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4691.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     180.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     166.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.993; 30-MINUTE = 0.993;  1-HOUR = 0.993
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     67.00 TO NODE     68.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    6479.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3472.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     490.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     254.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.340
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.989; 30-MINUTE = 0.989;  1-HOUR = 0.989
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     68.00 TO NODE     69.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2670.00; DOWNSTREAM ELEVATION(FT) =    2180.00
  CHANNEL LENGTH(FT) =    9751.00       MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     68.10 TO NODE     69.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   11295.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5893.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     720.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     556.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.480
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
```

```
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.975; 30-MINUTE = 0.975;  1-HOUR = 0.975
    3-HOUR = 0.996;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     66.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2180.00; DOWNSTREAM ELEVATION(FT) =    2040.00
  CHANNEL LENGTH(FT) =    6588.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     69.10 TO NODE     66.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERCOURSE LENGTH =   10093.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5800.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     140.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     246.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.989; 30-MINUTE = 0.989;  1-HOUR = 0.989
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
```

```
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.50 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2040.00; DOWNSTREAM ELEVATION(FT) =    2000.00
  CHANNEL LENGTH(FT) =    1241.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.10 TO NODE     66.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    7902.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    1114.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     160.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     166.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.660; LOW LOSS FRACTION = 0.470
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.993; 30-MINUTE = 0.993;  1-HOUR = 0.993
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000

****************************************************************************
  FLOW PROCESS FROM NODE     66.50 TO NODE     66.50 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.50 TO NODE     66.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.50 TO NODE     66.50 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [25ya6.dna                      ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [25YAREA6.DAT   ]   Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
60.00	61.00	Subarea (UH) Added to Stream #1	0.0	1744.6	16.333		
61.00	62.00	Convex Routing: Stream #1	1744.6	1742.4	16.500		
61.10	62.00	Subarea (UH) Added to Stream #2	0.0	132.4	16.333		
62.00	62.00	Stream #2 Added to: Stream #1	1742.4	1874.8	16.500		
62.00	62.00	View: Stream #1		1874.8	16.500	272.03	3
62.00	62.00	Zero Out: Stream #2	132.4	0.0			
63.00	64.00	Subarea (UH) Added to Stream #2	0.0	482.7	16.333		
64.00	62.00	Convex Routing: Stream #2	482.7	482.3	16.583		
64.10	62.00	Subarea (UH) Added to Stream #3	0.0	112.4	16.083		
62.00	62.00	Stream #3 Added to: Stream #2	482.3	590.3	16.500		
62.00	62.00	Zero Out: Stream #3	112.4	0.0			
62.00	62.00	Stream #2 Added to: Stream #1	1874.8	2465.1	16.500		
62.00	62.00	View: Stream #1		2465.1	16.500	351.11	3
62.00	62.00	Zero Out: Stream #2	590.3	0.0			
62.00	65.00	Convex Routing: Stream #1	2465.1	2415.2	16.583		

62.10	65.00	Subarea (UH) Added to	Stream #2	0.0	375.1	16.333		
65.00	65.00	Stream #2 Added to:	Stream #1	2415.2	2680.3	16.583		
65.00	65.00	View:	Stream #1		2680.3	16.583	401.43	3
65.00	65.00	Zero Out:	Stream #2	375.1	0.0			
65.00	66.00	Convex Routing:	Stream #1	2680.3	2628.5	16.750		
65.10	66.00	Subarea (UH) Added to	Stream #5	0.0	188.0	16.333		
66.00	66.00	Stream #5 Added to:	Stream #1	2628.5	2744.9	16.750		
66.00	66.00	View:	Stream #1		2744.9	16.750	424.92	3
66.00	66.00	Zero Out:	Stream #5	188.0	0.0			
67.00	68.00	Subarea (UH) Added to	Stream #2	0.0	337.0	16.333		
68.00	69.00	Convex Routing:	Stream #2	337.0	332.4	16.750		
68.10	69.00	Subarea (UH) Added to	Stream #3	0.0	617.3	16.333		
69.00	69.00	Stream #3 Added to:	Stream #2	332.4	906.3	16.500		
69.00	69.00	View:	Stream #2		906.3	16.500	127.92	3
69.00	69.00	Zero Out:	Stream #3	617.3	0.0			
69.00	66.00	Convex Routing:	Stream #2	906.3	886.5	16.667		
69.10	66.00	Subarea (UH) Added to	Stream #5	0.0	238.1	16.333		
66.00	66.00	Stream #5 Added to:	Stream #2	886.5	1087.7	16.667		
66.00	66.00	Stream #2 Added to:	Stream #1	2744.9	3765.3	16.667		
66.00	66.00	View:	Stream #1		3765.3	16.667	587.60	3
66.00	66.00	Zero Out:	Stream #2	1087.7	0.0			
66.00	66.50	Convex Routing:	Stream #1	3765.3	3736.3	16.750		
66.10	66.50	Subarea (UH) Added to	Stream #2	0.0	159.3	16.333		
66.50	66.50	Stream #2 Added to:	Stream #1	3736.3	3805.9	16.750		
66.50	66.50	View:	Stream #1		3805.9	16.750	610.32	3

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [25YAREA6.DAT] Page: 2 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
66.50	66.50	Store:	Stream #1	3805.9	3805.9	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

              F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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                           Analysis prepared by:

                                  Stantec



----------------------------------------------------------------------------
  FILE NAME: 25YAREA7.DAT
  TIME/DATE OF STUDY: 16:06 11/04/2008


                          ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     70.00 TO NODE     71.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =    7740.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4234.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     470.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     291.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.180; LOW LOSS FRACTION = 0.320
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.987; 30-MINUTE = 0.987;  1-HOUR = 0.987
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     71.00 TO NODE     72.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2570.00; DOWNSTREAM ELEVATION(FT) =    2200.00
  CHANNEL LENGTH(FT) =    6913.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     71.10 TO NODE     72.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    8964.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4687.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     680.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     328.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.510
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.985; 30-MINUTE = 0.985;  1-HOUR = 0.985
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     72.00 TO NODE     72.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     72.00 TO NODE     72.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     72.00 TO NODE     72.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     72.00 TO NODE     73.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2200.00; DOWNSTREAM ELEVATION(FT) =    2050.00
  CHANNEL LENGTH(FT) =    6313.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     72.10 TO NODE     73.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    8809.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4662.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     350.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     246.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.989; 30-MINUTE = 0.989;  1-HOUR = 0.989
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     73.00 TO NODE     73.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     73.00 TO NODE     73.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     73.00 TO NODE     73.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     73.00 TO NODE     74.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2050.00; DOWNSTREAM ELEVATION(FT) =    2030.00
  CHANNEL LENGTH(FT) =     728.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     75.00 TO NODE     76.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   12625.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5849.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     540.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     487.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.470
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.978; 30-MINUTE = 0.978;  1-HOUR = 0.978
    3-HOUR = 0.997;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     76.00 TO NODE     77.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2500.00; DOWNSTREAM ELEVATION(FT) =    2180.00
  CHANNEL LENGTH(FT) =    6103.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     76.10 TO NODE     77.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    7602.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4050.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     780.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     305.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.240; LOW LOSS FRACTION = 0.400
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.986; 30-MINUTE = 0.986;  1-HOUR = 0.986
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     77.00 TO NODE     77.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     77.00 TO NODE     77.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     77.00 TO NODE     77.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     77.00 TO NODE     78.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2180.00; DOWNSTREAM ELEVATION(FT) =    2050.00
  CHANNEL LENGTH(FT) =    5723.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
```

```
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     77.10 TO NODE     78.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
==============================================================================
  WATERCOURSE LENGTH =   12003.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6262.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     475.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     304.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.310; LOW LOSS FRACTION = 0.510
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.986; 30-MINUTE = 0.986;  1-HOUR = 0.986
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


******************************************************************************
  FLOW PROCESS FROM NODE     78.00 TO NODE     78.00 IS CODE =   7
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     78.00 TO NODE     78.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     78.00 TO NODE     78.00 IS CODE =   6
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     78.00 TO NODE     74.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2050.00; DOWNSTREAM ELEVATION(FT) =    2030.00
  CHANNEL LENGTH(FT) =     425.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     74.00 TO NODE     74.00 IS CODE =   7
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     74.00 TO NODE     74.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     74.00 TO NODE     74.00 IS CODE =   6
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     74.00 TO NODE     79.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
```

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  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2030.00; DOWNSTREAM ELEVATION(FT) =    1930.00
  CHANNEL LENGTH(FT) =    3032.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     74.10 TO NODE     79.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    8397.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5032.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     430.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     442.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.980; 30-MINUTE = 0.980;  1-HOUR = 0.980
    3-HOUR = 0.997;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     79.00 TO NODE     79.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     79.00 TO NODE     79.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     79.00 TO NODE     79.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [25ya7.dna                      ]

============================================================================
============================================================================

+-----------------------------------------------------------------------------------------------------------------------+
|                                            * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                   |
|INPUT FILENAME: [25YAREA7.DAT   ]                                                                     Page:   1 of     |
+-------------------+-------------------------------+-----------------------+-------------+-------------+-------------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|             |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES   |
+-------------------+-------------------------------+-----------------------+-------------+-------------+-------------+
|    70.00      71.00| Subarea (UH) Added to Stream #1|      0.0      386.3|     16.333 |             |             |
|    71.00      72.00| Convex Routing:       Stream #1|    386.3      383.2|     16.667 |             |             |
|    71.10      72.00| Subarea (UH) Added to Stream #2|      0.0      391.6|     16.333 |             |             |
|    72.00      72.00| Stream #2 Added to:   Stream #1|    383.2      744.2|     16.500 |             |             |
|    72.00      72.00| View:                 Stream #1|               744.2|     16.500 |      100.36|      3      |
+-------------------+-------------------------------+-----------------------+-------------+-------------+-------------+
|    72.00      72.00| Zero Out:             Stream #2|    391.6        0.0|             |             |             |
|    72.00      73.00| Convex Routing:       Stream #1|    744.2      718.8|     16.667 |             |             |
|    72.10      73.00| Subarea (UH) Added to Stream #2|      0.0      284.7|     16.333 |             |             |
|    73.00      73.00| Stream #2 Added to:   Stream #1|    718.8      899.8|     16.500 |             |             |
|    73.00      73.00| View:                 Stream #1|               899.8|     16.500 |      135.12|      3      |
+-------------------+-------------------------------+-----------------------+-------------+-------------+-------------+
|    73.00      73.00| Zero Out:             Stream #2|    284.7        0.0|             |             |             |
|    73.00      74.00| Convex Routing:       Stream #1|    899.8      873.3|     16.500 |             |             |
|    75.00      76.00| Subarea (UH) Added to Stream #2|      0.0      509.0|     16.333 |             |             |
|    76.00      77.00| Convex Routing:       Stream #2|    509.0      499.7|     16.583 |             |             |
|    76.10      77.00| Subarea (UH) Added to Stream #3|      0.0      391.2|     16.333 |             |             |
+-------------------+-------------------------------+-----------------------+-------------+-------------+-------------+
|    77.00      77.00| Stream #3 Added to:   Stream #2|    499.7      862.7|     16.500 |             |             |
|    77.00      77.00| View:                 Stream #2|               862.7|     16.500 |      123.71|      3      |
|    77.00      77.00| Zero Out:             Stream #3|    391.2        0.0|             |             |             |
|    77.00      78.00| Convex Routing:       Stream #2|    862.7      809.0|     16.667 |             |             |
|    77.10      78.00| Subarea (UH) Added to Stream #3|      0.0      319.7|     16.333 |             |             |
+-------------------+-------------------------------+-----------------------+-------------+-------------+-------------+
|    78.00      78.00| Stream #3 Added to:   Stream #2|    809.0     1047.9|     16.667 |             |             |
|    78.00      78.00| View:                 Stream #2|              1047.9|     16.667 |      167.91|      3      |
|    78.00      78.00| Zero Out:             Stream #3|    319.7        0.0|             |             |             |
|    78.00      74.00| Convex Routing:       Stream #2|   1047.9     1040.9|     16.667 |             |             |
|    74.00      74.00| Stream #2 Added to:   Stream #1|    873.3     1912.5|     16.667 |             |             |
```

74.00	74.00	View:	Stream #1		1912.5	16.667	303.03	3
74.00	74.00	Zero Out:	Stream #2	1040.9	0.0			
74.00	79.00	Convex Routing:	Stream #1	1912.5	1870.4	16.750		
74.10	79.00	Subarea (UH) Added to	Stream #2	0.0	511.8	16.333		
79.00	79.00	Stream #2 Added to:	Stream #1	1870.4	2215.7	16.500		
79.00	79.00	View:	Stream #1		2215.7	16.500	365.27	3
79.00	79.00	Store:	Stream #1	2215.7	2215.7	16.500		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

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****************************************************************************

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                          Analysis prepared by:

                                 Stantec




----------------------------------------------------------------------------
  FILE NAME: 25YAREA8.DAT
  TIME/DATE OF STUDY: 16:06 11/04/2008


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE     80.00 TO NODE     81.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   13409.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6657.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1070.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     351.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.210; LOW LOSS FRACTION = 0.360
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     81.00 TO NODE     82.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2150.00; DOWNSTREAM ELEVATION(FT) =    1937.00
  CHANNEL LENGTH(FT) =    8111.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     81.10 TO NODE     82.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   19314.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    9077.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1283.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1070.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.290; LOW LOSS FRACTION = 0.480
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.952; 30-MINUTE = 0.952;  1-HOUR = 0.952
    3-HOUR = 0.993;    6-HOUR = 0.996; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     82.00 TO NODE     82.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     82.00 TO NODE     82.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     82.00 TO NODE     82.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [25ya8.dna                    ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [25YAREA8.DAT] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
80.00	81.00	Subarea (UH) Added to Stream #1	0.0	412.9	16.333		
81.00	82.00	Convex Routing: Stream #1	412.9	401.9	16.750		
81.10	82.00	Subarea (UH) Added to Stream #2	0.0	933.4	16.333		
82.00	82.00	Stream #2 Added to: Stream #1	401.9	1309.4	16.750		
82.00	82.00	View: Stream #1		1309.4	16.750	220.85	3
82.00	82.00	Store: Stream #1	1309.4	1309.4	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

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****************************************************************************

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                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: 25YAREA9.DAT
  TIME/DATE OF STUDY: 16:07 11/04/2008


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE     90.00 TO NODE     91.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   26139.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   12633.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1870.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1426.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.330
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.936; 30-MINUTE = 0.936;  1-HOUR = 0.936
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE     91.00 TO NODE     92.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2290.00; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =  10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     91.10 TO NODE     92.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   39166.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   18246.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1580.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    3747.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.240; LOW LOSS FRACTION = 0.400
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.833; 30-MINUTE = 0.833;  1-HOUR = 0.833
    3-HOUR = 0.975;    6-HOUR = 0.987; 24-HOUR = 0.992


****************************************************************************
  FLOW PROCESS FROM NODE     92.00 TO NODE     92.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     92.00 TO NODE     92.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     92.00 TO NODE     92.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     92.00 TO NODE     93.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    1940.00; DOWNSTREAM ELEVATION(FT) =    1910.00
  CHANNEL LENGTH(FT) =    2347.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     92.10 TO NODE     93.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   15967.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   10526.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     215.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1558.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.930; 30-MINUTE = 0.930;  1-HOUR = 0.930
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [25ya9.dna                      ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [25YAREA9.DAT   ] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
90.00	91.00	Subarea (UH) Added to Stream #1	0.0	1292.5	16.583		
91.00	92.00	Convex Routing: Stream #1	1292.5	1281.7	16.917		
91.10	92.00	Subarea (UH) Added to Stream #2	0.0	2368.4	16.833		
92.00	92.00	Stream #2 Added to: Stream #1	1281.7	3650.0	16.917		
92.00	92.00	View: Stream #1		3650.0	16.917	851.59	3
92.00	92.00	Zero Out: Stream #2	2368.4	0.0			
92.00	93.00	Convex Routing: Stream #1	3650.0	3616.1	16.917		
92.10	93.00	Subarea (UH) Added to Stream #2	0.0	1208.7	16.583		
93.00	93.00	Stream #2 Added to: Stream #1	3616.1	4511.6	16.917		

93.00	93.00	View:	Stream #1		4511.6	16.917	1066.77	3
93.00	93.00	Store:	Stream #1	4511.6	4511.6	16.917		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
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END OF FLOODSCx ROUTING ANALYSIS

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****************************************************************************

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                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: MID-25.DAT
  TIME/DATE OF STUDY: 16:15 11/06/2008


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =    5635.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2271.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     124.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     102.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    522.00 TO NODE    524.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    4500.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2069.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      36.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     158.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.993; 30-MINUTE = 0.993;  1-HOUR = 0.993
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    516.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     182.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2201.15; DOWNSTREAM ELEVATION(FT) =    2197.26
  PIPE DIAMETER(FT) =   3.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    524.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).
```

```
  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   80.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2197.26; DOWNSTREAM ELEVATION(FT) =    2165.00
  CHANNEL LENGTH(FT) =    4500.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    492.00 TO NODE    494.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    4191.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    1376.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      95.850 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =      83.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.996; 30-MINUTE = 0.996;  1-HOUR = 0.996
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    494.00 TO NODE    496.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     186.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2187.15; DOWNSTREAM ELEVATION(FT) =    2184.47
  PIPE DIAMETER(FT) =   3.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    496.00 TO NODE    524.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   80.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2184.47; DOWNSTREAM ELEVATION(FT) =    2165.00
  CHANNEL LENGTH(FT) =    2558.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
```

```
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    526.00 IS CODE =   4
------------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
==============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2165.00; DOWNSTREAM ELEVATION(FT) =    2164.99
  PIPE DIAMETER(FT) =   8.14
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    534.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  100.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2164.99; DOWNSTREAM ELEVATION(FT) =    2160.00
  CHANNEL LENGTH(FT) =    2819.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    534.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
==============================================================================
  WATERCOURSE LENGTH =   10308.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4916.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     377.000 FEET
  BASIN FACTOR = 0.086
  WATERSHED AREA =     655.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.230; LOW LOSS FRACTION = 0.400
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.971; 30-MINUTE = 0.971;  1-HOUR = 0.971
    3-HOUR = 0.996;    6-HOUR = 0.998; 24-HOUR = 0.999


******************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   7
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   6
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    558.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  250.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2160.00; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =   10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    542.00 TO NODE    544.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   17024.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   11089.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     458.000 FEET
  BASIN FACTOR = 0.068
  WATERSHED AREA =    2382.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.280; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.894; 30-MINUTE = 0.894;  1-HOUR = 0.894
    3-HOUR = 0.984;    6-HOUR = 0.992; 24-HOUR = 0.995


****************************************************************************
  FLOW PROCESS FROM NODE    544.00 TO NODE    546.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     215.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2060.84; DOWNSTREAM ELEVATION(FT) =    2056.48
  PIPE DIAMETER(FT) =   3.50
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    546.00 TO NODE    558.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  300.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2056.48; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =    4584.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    536.00 TO NODE    558.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   11492.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5411.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     110.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =    1937.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.914; 30-MINUTE = 0.914;  1-HOUR = 0.914
    3-HOUR = 0.987;    6-HOUR = 0.994; 24-HOUR = 0.996


****************************************************************************
  FLOW PROCESS FROM NODE    482.00 TO NODE    484.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERCOURSE LENGTH =   10151.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6367.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     130.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =     370.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.520
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
```

```
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.983; 30-MINUTE = 0.983;  1-HOUR = 0.983
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    484.00 TO NODE    486.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #4<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 4 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     189.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2059.60; DOWNSTREAM ELEVATION(FT) =    2056.42
  PIPE DIAMETER(FT) =   3.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    486.00 TO NODE    558.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #4 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 4 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  150.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2056.42; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =    6202.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    504.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERCOURSE LENGTH =   24948.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    8520.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     777.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =    2473.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.310; LOW LOSS FRACTION = 0.500
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.890; 30-MINUTE = 0.890;  1-HOUR = 0.890
    3-HOUR = 0.983;    6-HOUR = 0.992; 24-HOUR = 0.995


****************************************************************************
  FLOW PROCESS FROM NODE    504.00 TO NODE    506.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #5<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 5 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2119.14; DOWNSTREAM ELEVATION(FT) =    2119.13
  PIPE DIAMETER(FT) =   8.90
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    506.00 TO NODE    558.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #5 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 5 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
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  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  150.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2122.99; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =   10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    551.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [25ya2.dna   ] TO STREAM #3<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    552.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2078.33; DOWNSTREAM ELEVATION(FT) =    2078.09
  PIPE DIAMETER(FT) =  15.03
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    552.00 TO NODE    558.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  350.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2078.09; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =    6929.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
```

```
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  500.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2013.00; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    7928.88      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    562.00 TO NODE    564.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    4636.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2021.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     102.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     155.300 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.993; 30-MINUTE = 0.993;  1-HOUR = 0.993
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    564.00 TO NODE    566.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     189.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2051.71; DOWNSTREAM ELEVATION(FT) =    2049.20
  PIPE DIAMETER(FT) =   8.00
============================================================================


****************************************************************************
```

```
 FLOW PROCESS FROM NODE    566.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
 >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
 THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
 ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
 (Reference: the National Engineering Handbook, Hydrology,
 Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

 ASSUMED REGULAR CHANNEL INFORMATION:
 BASEWIDTH(FT) =  200.00     CHANNEL Z = 10.00
 UPSTREAM ELEVATION(FT) =    2049.20; DOWNSTREAM ELEVATION(FT) =    1940.00
 CHANNEL LENGTH(FT) =    8343.12      MANNING'S FACTOR = 0.035
 CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    572.00 TO NODE    574.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
 WATERCOURSE LENGTH =    5001.000 FEET
 LENGTH FROM CONCENTRATION POINT TO CENTROID =    2473.000 FEET
 ELEVATION VARIATION ALONG WATERCOURSE =     115.000 FEET
 BASIN FACTOR = 0.040
 WATERSHED AREA =     233.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
 VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
 MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
 SPECIFIED PEAK RAINFALL DEPTHS(INCH):
 5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
   3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
 PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
 5-MINUTE = 0.990; 30-MINUTE = 0.990;  1-HOUR = 0.990
   3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
 FLOW PROCESS FROM NODE    574.00 TO NODE    576.00 IS CODE =   4
----------------------------------------------------------------------------
 >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
 MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
 STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
 VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
 EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
 OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
        UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
        (0.938)(DIAMETER):

 PIPELENGTH(FT) =     186.00     MANNINGS FACTOR = 0.024
 UPSTREAM ELEVATION(FT) =    2049.42; DOWNSTREAM ELEVATION(FT) =    2047.05
 PIPE DIAMETER(FT) =  12.50
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    576.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
 >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
 THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
 ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
 (Reference: the National Engineering Handbook, Hydrology,
 Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

 ASSUMED REGULAR CHANNEL INFORMATION:
 BASEWIDTH(FT) =  250.00     CHANNEL Z = 10.00
 UPSTREAM ELEVATION(FT) =    2047.05; DOWNSTREAM ELEVATION(FT) =    1940.00
 CHANNEL LENGTH(FT) =    7462.00      MANNING'S FACTOR = 0.035
 CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    566.00 TO NODE    789.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
 WATERCOURSE LENGTH =    8343.000 FEET
 LENGTH FROM CONCENTRATION POINT TO CENTROID =    4684.000 FEET
 ELEVATION VARIATION ALONG WATERCOURSE =     122.000 FEET
 BASIN FACTOR = 0.040
 WATERSHED AREA =     895.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
 VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
 MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
 SPECIFIED PEAK RAINFALL DEPTHS(INCH):
 5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
   3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
 PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
 5-MINUTE = 0.960; 30-MINUTE = 0.960;  1-HOUR = 0.960
```

```
    3-HOUR = 0.994;    6-HOUR = 0.997; 24-HOUR = 0.998

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    781.00 TO NODE    781.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [25ya4.dna   ] TO STREAM #2<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    783.00 TO NODE    783.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [25ya5.dna   ] TO STREAM #3<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    785.00 TO NODE    785.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [25ya6.dna   ] TO STREAM #4<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    787.00 TO NODE    787.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [25ya7.dna   ] TO STREAM #5<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    781.00 TO NODE    782.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2030.91; DOWNSTREAM ELEVATION(FT) =    2030.79
  PIPE DIAMETER(FT) =  19.74
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    782.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  500.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2030.79; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    9681.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    783.00 TO NODE    784.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2023.00; DOWNSTREAM ELEVATION(FT) =    2022.99
  PIPE DIAMETER(FT) =   9.37
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    784.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  100.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2023.00; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    8854.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    785.00 TO NODE    786.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #4<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 4 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      34.50     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    1989.82; DOWNSTREAM ELEVATION(FT) =    1989.39
  PIPE DIAMETER(FT) =  17.77
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    786.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #4 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 4 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  500.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1989.00; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    6046.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    787.00 TO NODE    788.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #5<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 5 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.40     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    1960.74; DOWNSTREAM ELEVATION(FT) =    1960.47
  PIPE DIAMETER(FT) =  11.19
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    788.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #5 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 5 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  200.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1960.50; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    2853.50      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
```

```
 >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    789.00 TO NODE    676.00 IS CODE = 5.2
----------------------------------------------------------------------------
 >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
 THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
 ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
 (Reference: the National Engineering Handbook, Hydrology,
 Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

 ASSUMED REGULAR CHANNEL INFORMATION:
 BASEWIDTH(FT) =  800.00     CHANNEL Z = 10.00
 UPSTREAM ELEVATION(FT) =    1940.00; DOWNSTREAM ELEVATION(FT) =    1901.22
 CHANNEL LENGTH(FT) =    3919.00      MANNING'S FACTOR = 0.035
 CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    672.00 TO NODE    676.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
 WATERCOURSE LENGTH =    3919.000 FEET
 LENGTH FROM CONCENTRATION POINT TO CENTROID =    3541.000 FEET
 ELEVATION VARIATION ALONG WATERCOURSE =      30.000 FEET
 BASIN FACTOR = 0.040
 WATERSHED AREA =     142.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
 VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
 MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
 SPECIFIED PEAK RAINFALL DEPTHS(INCH):
 5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
   3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
 PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
 5-MINUTE = 0.994; 30-MINUTE = 0.994;  1-HOUR = 0.994
   3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
 FLOW PROCESS FROM NODE    676.00 TO NODE    676.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    676.00 TO NODE    676.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    676.00 TO NODE    678.00 IS CODE =   4
----------------------------------------------------------------------------
 >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
============================================================================
 MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
 STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
 VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
 EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
 OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
        UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
        (0.938)(DIAMETER):

 PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
 UPSTREAM ELEVATION(FT) =    1901.22; DOWNSTREAM ELEVATION(FT) =    1900.85
 PIPE DIAMETER(FT) =  17.77
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    678.00 TO NODE    696.00 IS CODE = 5.2
----------------------------------------------------------------------------
 >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
 THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
 ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
 (Reference: the National Engineering Handbook, Hydrology,
 Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

 ASSUMED REGULAR CHANNEL INFORMATION:
 BASEWIDTH(FT) =  400.00     CHANNEL Z = 10.00
 UPSTREAM ELEVATION(FT) =    1900.85; DOWNSTREAM ELEVATION(FT) =    1841.18
 CHANNEL LENGTH(FT) =    7588.00      MANNING'S FACTOR = 0.035
 CONSTANT LOSS RATE(CFS) =    0.00
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    696.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [25ya8.dna   ] TO STREAM #2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    696.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    696.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    698.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      37.10     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    1841.18; DOWNSTREAM ELEVATION(FT) =    1840.91
  PIPE DIAMETER(FT) =  10.34
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    698.00 TO NODE    778.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  300.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1840.91; DOWNSTREAM ELEVATION(FT) =    1832.00
  CHANNEL LENGTH(FT) =    1077.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    682.00 TO NODE    688.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    9519.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4686.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     135.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     786.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.965; 30-MINUTE = 0.965;  1-HOUR = 0.965
    3-HOUR = 0.995;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE    688.00 TO NODE    778.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
```

```
  BASEWIDTH(FT) =  300.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1870.00; DOWNSTREAM ELEVATION(FT) =    1832.00
  CHANNEL LENGTH(FT) =    4272.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    688.00 TO NODE    778.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    4272.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    1686.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      35.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     239.300 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.989; 30-MINUTE = 0.989;  1-HOUR = 0.989
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    738.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  500.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1832.00; DOWNSTREAM ELEVATION(FT) =    1800.00
  CHANNEL LENGTH(FT) =    6748.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    738.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    6748.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3299.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      35.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     199.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.991; 30-MINUTE = 0.991;  1-HOUR = 0.991
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    738.00 TO NODE    738.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    738.00 TO NODE    738.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    738.00 TO NODE    738.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [MID-25.DAT]   Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
512.00	514.00	Subarea (UH) Added to Stream #1	0.0	154.3	16.250		
522.00	524.00	Subarea (UH) Added to Stream #2	0.0	233.2	16.333		
514.00	516.00	Pipe Flow Routing: Stream #1	154.3	52.8	16.083		
516.00	524.00	Convex Routing: Stream #1	52.8	52.8	18.000		
492.00	494.00	Subarea (UH) Added to Stream #3	0.0	154.6	16.250		
494.00	496.00	Pipe Flow Routing: Stream #3	154.6	43.4	16.083		
496.00	524.00	Convex Routing: Stream #3	43.4	43.4	17.833		
524.00	524.00	Stream #3 Added to: Stream #1	52.8	96.1	17.833		
524.00	524.00	Stream #2 Added to: Stream #1	96.1	297.5	16.333		
524.00	524.00	Zero Out: Stream #3	43.4	0.0			
524.00	524.00	Zero Out: Stream #2	233.2	0.0			
524.00	526.00	Pipe Flow Routing: Stream #1	297.5	62.8	16.000		
526.00	534.00	Convex Routing: Stream #1	62.8	62.8	20.583		
532.00	534.00	Subarea (UH) Added to Stream #2	0.0	487.0	16.833		
534.00	534.00	Stream #2 Added to: Stream #1	62.8	548.1	16.833		
534.00	534.00	Zero Out: Stream #2	487.0	0.0			
534.00	558.00	Convex Routing: Stream #1	548.1	517.7	17.500		
542.00	544.00	Subarea (UH) Added to Stream #2	0.0	1242.8	17.083		
544.00	546.00	Pipe Flow Routing: Stream #2	1242.8	77.6	12.333		
546.00	558.00	Convex Routing: Stream #2	77.6	77.6	16.500		
536.00	558.00	Subarea (UH) Added to Stream #3	0.0	1669.2	16.500		
482.00	484.00	Subarea (UH) Added to Stream #4	0.0	308.4	16.583		
484.00	486.00	Pipe Flow Routing: Stream #4	308.4	46.9	15.833		
486.00	558.00	Convex Routing: Stream #4	46.9	46.9	20.833		
502.00	504.00	Subarea (UH) Added to Stream #5	0.0	1820.0	16.667		
504.00	506.00	Pipe Flow Routing: Stream #5	1820.0	79.6	12.167		
506.00	558.00	Convex Routing: Stream #5	79.6	79.6	16.167		
558.00	558.00	Stream #3 Added to: Stream #1	517.7	1818.0	16.583		
558.00	558.00	Zero Out: Stream #3	1669.2	0.0			
551.00	551.00	Read/Add Hydrograph: Stream #3	0.0	2422.0	16.750		
551.00	552.00	Pipe Flow Routing: Stream #3	2422.0	1576.8	16.500		
552.00	558.00	Convex Routing: Stream #3	1576.8	1576.8	18.000		
558.00	558.00	Stream #5 Added to: Stream #1	1818.0	1897.6	16.583		
558.00	558.00	Stream #4 Added to: Stream #1	1897.6	1941.5	16.583		
558.00	558.00	Stream #3 Added to: Stream #1	1941.5	2904.0	16.667		
558.00	558.00	Stream #2 Added to: Stream #1	2904.0	2981.6	16.667		
558.00	558.00	Zero Out: Stream #5	79.6	0.0			
558.00	558.00	Zero Out: Stream #4	46.9	0.0			
558.00	558.00	Zero Out: Stream #3	1576.8	0.0			
558.00	558.00	Zero Out: Stream #2	77.6	0.0			

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
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* AES FLOODSCx PROGRAM RESULTS SUMMARY *

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UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
558.00	789.00	Convex Routing: Stream #1	2981.6	2890.3	17.167		
562.00	564.00	Subarea (UH) Added to Stream #2	0.0	257.2	16.250		

564.00	566.00	Pipe Flow Routing: Stream #2	257.2	255.1	16.250		
566.00	789.00	Convex Routing: Stream #2	255.1	184.9	16.917		
572.00	574.00	Subarea (UH) Added to Stream #3	0.0	357.1	16.250		
574.00	576.00	Pipe Flow Routing: Stream #3	357.1	354.3	16.250		
576.00	789.00	Convex Routing: Stream #3	354.3	276.2	16.833		
566.00	789.00	Subarea (UH) Added to Stream #4	0.0	976.4	16.417		
789.00	789.00	Stream #4 Added to: Stream #1	2890.3	3132.9	17.167		
789.00	789.00	Stream #3 Added to: Stream #1	3132.9	3314.6	17.083		
789.00	789.00	Stream #2 Added to: Stream #1	3314.6	3462.7	17.083		
789.00	789.00	Zero Out: Stream #4	976.4	0.0			
789.00	789.00	Zero Out: Stream #3	276.2	0.0			
789.00	789.00	Zero Out: Stream #2	184.9	0.0			
781.00	781.00	Read/Add Hydrograph: Stream #2	0.0	4606.1	16.750		
783.00	783.00	Read/Add Hydrograph: Stream #3	0.0	2440.2	16.750		
785.00	785.00	Read/Add Hydrograph: Stream #4	0.0	3805.9	16.750		
787.00	787.00	Read/Add Hydrograph: Stream #5	0.0	2215.7	16.500		
781.00	782.00	Pipe Flow Routing: Stream #2	4606.1	2306.6	16.417		
782.00	789.00	Convex Routing: Stream #2	2306.6	2306.6	18.833		
783.00	784.00	Pipe Flow Routing: Stream #3	2440.2	91.3	11.417		
784.00	789.00	Convex Routing: Stream #3	91.3	91.3	14.917		
785.00	786.00	Pipe Flow Routing: Stream #4	3805.9	3176.9	16.583		
786.00	789.00	Convex Routing: Stream #4	3176.9	3172.2	17.333		
787.00	788.00	Pipe Flow Routing: Stream #5	2215.7	756.8	16.167		
788.00	789.00	Convex Routing: Stream #5	756.8	756.8	17.750		
789.00	789.00	Stream #5 Added to: Stream #1	3462.7	4219.5	17.083		
789.00	789.00	Stream #4 Added to: Stream #1	4219.5	7360.3	17.083		
789.00	789.00	Stream #3 Added to: Stream #1	7360.3	7451.6	17.083		
789.00	789.00	Stream #2 Added to: Stream #1	7451.6	9693.6	17.167		
789.00	789.00	Zero Out: Stream #5	756.8	0.0			
789.00	789.00	Zero Out: Stream #4	3172.2	0.0			
789.00	789.00	Zero Out: Stream #3	91.3	0.0			
789.00	789.00	Zero Out: Stream #2	2306.6	0.0			
789.00	676.00	Convex Routing: Stream #1	9693.6	9655.7	17.333		
672.00	676.00	Subarea (UH) Added to Stream #2	0.0	191.6	16.333		
676.00	676.00	Stream #2 Added to: Stream #1	9655.7	9684.3	17.333		
676.00	676.00	Zero Out: Stream #2	191.6	0.0			
676.00	678.00	Pipe Flow Routing: Stream #1	9684.3	3060.1	16.333		
678.00	696.00	Convex Routing: Stream #1	3060.1	3060.1	18.250		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

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UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
696.00	696.00	Read/Add Hydrograph: Stream #2	0.0	5764.2	16.917		
696.00	696.00	Stream #2 Added to: Stream #1	3060.1	8816.3	16.917		
696.00	696.00	Zero Out: Stream #2	5764.2	0.0			
696.00	698.00	Pipe Flow Routing: Stream #1	8816.3	572.9	5.417		
698.00	778.00	Convex Routing: Stream #1	572.9	572.9	6.250		
682.00	688.00	Subarea (UH) Added to Stream #2	0.0	824.4	16.417		
688.00	778.00	Convex Routing: Stream #2	824.4	748.7	16.750		
688.00	778.00	Subarea (UH) Added to Stream #3	0.0	368.7	16.250		
778.00	778.00	Stream #3 Added to: Stream #1	572.9	941.6	16.250		
778.00	778.00	Stream #2 Added to: Stream #1	941.6	1413.0	16.750		
778.00	778.00	Zero Out: Stream #3	368.7	0.0			
778.00	778.00	Zero Out: Stream #2	748.7	0.0			
778.00	738.00	Convex Routing: Stream #1	1413.0	1326.0	17.333		
778.00	738.00	Subarea (UH) Added to Stream #2	0.0	227.7	16.417		
738.00	738.00	Stream #2 Added to: Stream #1	1326.0	1374.2	17.250		
738.00	738.00	Zero Out: Stream #2	227.7	0.0			
738.00	738.00	View: Stream #1		1374.2	17.250	5491.71	3

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

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****************************************************************************

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                         Analysis prepared by:

                                Stantec



----------------------------------------------------------------------------
  FILE NAME: BOT-25.DAT
  TIME/DATE OF STUDY: 15:04 11/06/2008


                        ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE    592.00 TO NODE    594.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =    6016.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3668.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     200.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     207.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.991; 30-MINUTE = 0.991;  1-HOUR = 0.991
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    594.00 TO NODE    596.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     187.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    1956.20; DOWNSTREAM ELEVATION(FT) =    1954.21
  PIPE DIAMETER(FT) =   7.50
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    596.00 TO NODE    668.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  400.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1954.21; DOWNSTREAM ELEVATION(FT) =    1913.00
  CHANNEL LENGTH(FT) =    4748.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    602.00 TO NODE    604.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    8380.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3358.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     215.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     496.900 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
```

```
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.978; 30-MINUTE = 0.978;  1-HOUR = 0.978
    3-HOUR = 0.997;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    604.00 TO NODE    606.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     181.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    1932.98; DOWNSTREAM ELEVATION(FT) =    1929.00
  PIPE DIAMETER(FT) =  10.90
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    606.00 TO NODE    668.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  250.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1929.00; DOWNSTREAM ELEVATION(FT) =    1913.00
  CHANNEL LENGTH(FT) =    2622.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    662.00 TO NODE    668.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    7964.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3311.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     137.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     361.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
```

```
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   6
--------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    758.00 IS CODE = 5.2
--------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
================================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  600.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1913.00; DOWNSTREAM ELEVATION(FT) =    1893.00
  CHANNEL LENGTH(FT) =    2052.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    612.00 TO NODE    614.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
================================================================================
  WATERCOURSE LENGTH =    5129.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2520.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     155.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     202.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.991; 30-MINUTE = 0.991;  1-HOUR = 0.991
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


********************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    616.00 IS CODE =   4
--------------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
================================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     190.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    1919.24; DOWNSTREAM ELEVATION(FT) =    1916.36
  PIPE DIAMETER(FT) =   5.50
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    758.00 IS CODE = 5.2
--------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
================================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  120.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1916.36; DOWNSTREAM ELEVATION(FT) =    1893.00
  CHANNEL LENGTH(FT) =    2909.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
================================================================================


********************************************************************************
  FLOW PROCESS FROM NODE    632.00 TO NODE    634.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
================================================================================
  WATERCOURSE LENGTH =    2094.000 FEET
```

```
  LENGTH FROM CONCENTRATION POINT TO CENTROID =     935.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      77.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =      46.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    634.00 TO NODE    636.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     282.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    1915.36; DOWNSTREAM ELEVATION(FT) =    1910.41
  PIPE DIAMETER(FT) =   5.50
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    636.00 TO NODE    758.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   40.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1910.41; DOWNSTREAM ELEVATION(FT) =    1893.00
  CHANNEL LENGTH(FT) =    2400.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    758.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERCOURSE LENGTH =    2909.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    1384.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      32.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     114.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 3<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    768.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  450.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1893.00; DOWNSTREAM ELEVATION(FT) =    1860.00
  CHANNEL LENGTH(FT) =    4621.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    768.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    4261.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3341.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      33.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     205.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.991; 30-MINUTE = 0.991;  1-HOUR = 0.991
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    768.00 TO NODE    768.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    768.00 TO NODE    768.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    768.00 TO NODE    768.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    768.00 TO NODE    728.00 IS CODE = 5.2
----------------------------------------------------------------------------
```

```
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) = 1000.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1860.00; DOWNSTREAM ELEVATION(FT) =    1825.00
  CHANNEL LENGTH(FT) =    2686.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    622.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    5831.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2833.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     165.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     103.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.550
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    626.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     244.00     MANNINGS FACTOR = 0.015
  UPSTREAM ELEVATION(FT) =    1899.18; DOWNSTREAM ELEVATION(FT) =    1893.60
  PIPE DIAMETER(FT) =   6.20
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    626.00 TO NODE    728.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  300.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1893.60; DOWNSTREAM ELEVATION(FT) =    1825.00
  CHANNEL LENGTH(FT) =    6384.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    652.00 TO NODE    654.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERCOURSE LENGTH =   36362.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   22020.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     265.000 FEET
  BASIN FACTOR = 0.046
  WATERSHED AREA =    3283.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.853; 30-MINUTE = 0.853;  1-HOUR = 0.853
    3-HOUR = 0.978;    6-HOUR = 0.989; 24-HOUR = 0.993
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    654.00 TO NODE    728.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #4 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 4 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  750.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1860.00; DOWNSTREAM ELEVATION(FT) =    1825.00
  CHANNEL LENGTH(FT) =    2589.00       MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    626.00 TO NODE    728.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERCOURSE LENGTH =    6384.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2141.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      80.000 FEET
  BASIN FACTOR = 0.044
  WATERSHED AREA =     853.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.540
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.962; 30-MINUTE = 0.962;  1-HOUR = 0.962
    3-HOUR = 0.994;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 4<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    748.00 IS CODE = 5.2
----------------------------------------------------------------------------
```

```
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  600.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1825.00; DOWNSTREAM ELEVATION(FT) =    1803.00
  CHANNEL LENGTH(FT) =    4153.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    748.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    4153.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2854.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      22.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     288.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.520
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.39; 30-MINUTE =  0.99;  1-HOUR =  1.22
    3-HOUR =  1.68;    6-HOUR =  2.15; 24-HOUR =  2.89
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.987; 30-MINUTE = 0.987;  1-HOUR = 0.987
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    748.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    748.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    748.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [BOT-25.DAT] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
592.00	594.00	Subarea (UH) Added to Stream #1	0.0	306.5	16.267		
594.00	596.00	Pipe Flow Routing: Stream #1	306.5	306.3	16.267		
596.00	668.00	Convex Routing: Stream #1	306.3	290.9	16.683		
602.00	604.00	Subarea (UH) Added to Stream #2	0.0	658.7	16.283		
604.00	606.00	Pipe Flow Routing: Stream #2	658.7	658.3	16.283		
606.00	668.00	Convex Routing: Stream #2	658.3	645.5	16.483		
662.00	668.00	Subarea (UH) Added to Stream #3	0.0	465.8	16.300		
668.00	668.00	Stream #3 Added to: Stream #2	645.5	996.7	16.400		
668.00	668.00	Stream #2 Added to: Stream #1	290.9	1129.1	16.467		
668.00	668.00	View: Stream #1		1129.1	16.467	147.69	3
668.00	668.00	Zero Out: Stream #3	465.8	0.0			
668.00	668.00	Zero Out: Stream #2	996.7	0.0			
668.00	758.00	Convex Routing: Stream #1	1129.1	1121.1	16.633		
612.00	614.00	Subarea (UH) Added to Stream #2	0.0	335.8	16.217		
614.00	616.00	Pipe Flow Routing: Stream #2	335.8	224.0	16.100		
616.00	758.00	Convex Routing: Stream #2	224.0	224.0	16.733		
632.00	634.00	Subarea (UH) Added to Stream #3	0.0	116.5	16.100		
634.00	636.00	Pipe Flow Routing: Stream #3	116.5	115.4	16.100		
636.00	758.00	Convex Routing: Stream #3	115.4	105.0	16.283		
616.00	758.00	Subarea (UH) Added to Stream #4	0.0	222.1	16.167		
758.00	758.00	Stream #4 Added to: Stream #3	105.0	280.3	16.200		
758.00	758.00	Stream #3 Added to: Stream #2	224.0	455.1	16.267		
758.00	758.00	Stream #2 Added to: Stream #1	1121.1	1411.5	16.617		
758.00	758.00	View: Stream #1		1411.5	16.617	198.06	3

758.00	758.00	Zero Out: Stream #4	222.1	0.0			
758.00	758.00	Zero Out: Stream #3	280.3	0.0			
758.00	758.00	Zero Out: Stream #2	455.1	0.0			
758.00	768.00	Convex Routing: Stream #1	1411.5	1403.1	16.917		
758.00	768.00	Subarea (UH) Added to Stream #2	0.0	281.9	16.267		
768.00	768.00	Stream #2 Added to: Stream #1	1403.1	1465.9	16.900		
768.00	768.00	View: Stream #1		1465.9	16.900	226.57	3
768.00	768.00	Zero Out: Stream #2	281.9	0.0			
768.00	728.00	Convex Routing: Stream #1	1465.9	1457.2	17.100		
622.00	624.00	Subarea (UH) Added to Stream #2	0.0	161.8	16.250		
624.00	626.00	Pipe Flow Routing: Stream #2	161.8	161.7	16.250		
626.00	728.00	Convex Routing: Stream #2	161.7	151.2	16.817		
652.00	654.00	Subarea (UH) Added to Stream #4	0.0	1188.5	17.617		
654.00	728.00	Convex Routing: Stream #4	1188.5	1178.3	17.800		
626.00	728.00	Subarea (UH) Added to Stream #5	0.0	1151.2	16.267		
728.00	728.00	Stream #5 Added to: Stream #4	1178.3	1650.9	16.300		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [BOT-25.DAT] Page: 2 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
728.00	728.00	Stream #4 Added to: Stream #2	151.2	1670.4	16.300		
728.00	728.00	Stream #2 Added to: Stream #1	1457.2	2685.8	17.133		
728.00	728.00	View: Stream #1		2685.8	17.133	798.15	3
728.00	728.00	Zero Out: Stream #5	1151.2	0.0			
728.00	728.00	Zero Out: Stream #4	1650.9	0.0			
728.00	728.00	Zero Out: Stream #2	1670.4	0.0			
728.00	748.00	Convex Routing: Stream #1	2685.8	2672.3	17.400		
728.00	748.00	Subarea (UH) Added to Stream #2	0.0	398.5	16.267		
748.00	748.00	Stream #2 Added to: Stream #1	2672.3	2726.8	17.400		
748.00	748.00	Zero Out: Stream #2	398.5	0.0			
748.00	748.00	View: Stream #1		2726.8	17.400	839.76	3

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

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100 – Year Event

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****************************************************************************

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                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: AREA2.DAT
  TIME/DATE OF STUDY: 13:06 11/04/2008


                          ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     21.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   18323.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   10424.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     600.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     917.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.280; LOW LOSS FRACTION = 0.380
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.959; 30-MINUTE = 0.959;  1-HOUR = 0.959
    3-HOUR = 0.994;    6-HOUR = 0.997; 24-HOUR = 0.998

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 TO NODE     22.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2200.00; DOWNSTREAM ELEVATION(FT) =    2030.00
  CHANNEL LENGTH(FT) =    4290.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     21.10 TO NODE     22.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   10534.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4207.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     330.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     272.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.988; 30-MINUTE = 0.988;  1-HOUR = 0.988
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE     22.00 TO NODE     13.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).
```

```
  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2030.00; DOWNSTREAM ELEVATION(FT) =    2000.00
  CHANNEL LENGTH(FT) =    2015.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   16770.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   10882.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     660.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1102.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.951; 30-MINUTE = 0.951;  1-HOUR = 0.951
    3-HOUR = 0.993;    6-HOUR = 0.996; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     11.00 TO NODE     12.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2160.00; DOWNSTREAM ELEVATION(FT) =    2093.00
  CHANNEL LENGTH(FT) =    6270.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     11.10 TO NODE     12.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   14475.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5830.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     347.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     304.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.986; 30-MINUTE = 0.986;  1-HOUR = 0.986
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     13.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2093.00; DOWNSTREAM ELEVATION(FT) =    2080.00
  CHANNEL LENGTH(FT) =    1318.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     12.10 TO NODE     13.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    9221.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5830.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     160.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     293.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.987; 30-MINUTE = 0.987;  1-HOUR = 0.987
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [area2.dna                    ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [AREA2.DAT   ]   Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
20.00	21.00	Subarea (UH) Added to Stream #1	0.0	1241.6	16.583		
21.00	22.00	Convex Routing: Stream #1	1241.6	1241.1	16.833		
21.10	22.00	Subarea (UH) Added to Stream #1	1241.1	1564.2	16.500		
22.00	13.00	Convex Routing: Stream #1	1564.2	1516.2	16.750		
10.00	11.00	Subarea (UH) Added to Stream #2	0.0	1442.4	16.583		
11.00	12.00	Convex Routing: Stream #2	1442.4	1435.4	16.917		
11.10	12.00	Subarea (UH) Added to Stream #2	1435.4	1776.1	16.750		
12.00	13.00	Convex Routing: Stream #2	1776.1	1736.7	16.750		
13.00	13.00	Stream #2 Added to: Stream #1	1516.2	3252.9	16.750		
13.00	13.00	View: Stream #1		3252.9	16.750	569.29	3
12.10	13.00	Subarea (UH) Added to Stream #3	0.0	471.2	16.333		
13.00	13.00	Stream #3 Added to: Stream #1	3252.9	3615.0	16.750		
13.00	13.00	View: Stream #1		3615.0	16.750	632.58	3
13.00	13.00	Store: Stream #1	3615.0	3615.0	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

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                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: AREA3.DAT
  TIME/DATE OF STUDY: 14:02 11/04/2008


                         ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   13305.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    7112.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1110.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     997.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.240; LOW LOSS FRACTION = 0.340
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.955; 30-MINUTE = 0.955;  1-HOUR = 0.955
    3-HOUR = 0.993;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     32.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2430.00; DOWNSTREAM ELEVATION(FT) =    2175.00
  CHANNEL LENGTH(FT) =    8810.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     31.10 TO NODE     32.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   14765.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    8380.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     265.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     761.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.966; 30-MINUTE = 0.966;  1-HOUR = 0.966
    3-HOUR = 0.995;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     33.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2175.00; DOWNSTREAM ELEVATION(FT) =    2060.00
  CHANNEL LENGTH(FT) =    7538.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     32.10 TO NODE     33.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   11196.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4891.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     220.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     310.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.986; 30-MINUTE = 0.986;  1-HOUR = 0.986
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     33.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     33.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     33.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 2 STORED IN FILE [area3.dna                      ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [AREA3.DAT   ]   Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
30.00	31.00	Subarea (UH) Added to	Stream #2	0.0	1701.5	16.333		
31.00	32.00	Convex Routing:	Stream #2	1701.5	1686.1	16.667		
31.10	32.00	Subarea (UH) Added to	Stream #3	0.0	1011.9	16.583		
32.00	32.00	Stream #3 Added to:	Stream #2	1686.1	2698.0	16.667		
32.00	32.00	View:	Stream #2		2698.0	16.667	400.61	3
32.00	32.00	Zero Out:	Stream #3	1011.9	0.0			
32.00	33.00	Convex Routing:	Stream #2	2698.0	2655.9	16.833		
32.10	33.00	Subarea (UH) Added to	Stream #3	0.0	503.3	16.333		
33.00	33.00	Stream #3 Added to:	Stream #2	2655.9	2927.0	16.750		

33.00	33.00	View:	Stream #2		2927.0	16.750	467.57	3
33.00	33.00	Store:	Stream #2	2927.0	2927.0	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

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                           Analysis prepared by:

                                  Stantec



----------------------------------------------------------------------------
  FILE NAME: A4.DAT
  TIME/DATE OF STUDY: 13:10 11/04/2008


                          ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     40.00 TO NODE     41.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   17608.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    8024.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1640.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1687.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.270
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.925; 30-MINUTE = 0.925;  1-HOUR = 0.925
    3-HOUR = 0.989;    6-HOUR = 0.994; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE     41.00 TO NODE     42.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2840.00; DOWNSTREAM ELEVATION(FT) =    2160.00
  CHANNEL LENGTH(FT) =  10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     41.10 TO NODE     42.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   17734.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    9145.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1360.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     826.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.300; LOW LOSS FRACTION = 0.410
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.963; 30-MINUTE = 0.963;  1-HOUR = 0.963
    3-HOUR = 0.994;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =   6
----------------------------------------------------------------------------
```

```
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     43.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2160.00; DOWNSTREAM ELEVATION(FT) =    2059.00
  CHANNEL LENGTH(FT) =    6831.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     42.10 TO NODE     43.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   13754.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    9447.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     540.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     549.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.975; 30-MINUTE = 0.975;  1-HOUR = 0.975
    3-HOUR = 0.996;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [area3.dna   ] TO STREAM #2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [a4.dna                           ]
```

==
==

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [A4.DAT] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
40.00	41.00	Subarea (UH) Added to Stream #1	0.0	2653.9	16.333		
41.00	42.00	Convex Routing: Stream #1	2653.9	2636.1	16.583		
41.10	42.00	Subarea (UH) Added to Stream #2	0.0	1195.1	16.333		
42.00	42.00	Stream #2 Added to: Stream #1	2636.1	3740.1	16.500		
42.00	42.00	Zero Out: Stream #2	1195.1	0.0			
42.00	42.00	View: Stream #1		3740.1	16.500	609.37	3
42.00	43.00	Convex Routing: Stream #1	3740.1	3667.7	16.750		
42.10	43.00	Subarea (UH) Added to Stream #2	0.0	764.8	16.333		
43.00	43.00	Stream #2 Added to: Stream #1	3667.7	4391.4	16.750		
43.00	43.00	Zero Out: Stream #2	764.8	0.0			
43.00	43.00	Read/Add Hydrograph: Stream #2	0.0	2927.0	16.750		
43.00	43.00	Stream #2 Added to: Stream #1	4391.4	7318.4	16.750		
43.00	43.00	View: Stream #1		7318.4	16.750	1195.11	3
43.00	43.00	Store: Stream #1	7318.4	7318.4	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

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                         Analysis prepared by:

                                Stantec



----------------------------------------------------------------------------
  FILE NAME: AREA5.DAT
  TIME/DATE OF STUDY: 13:10 11/04/2008


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE     40.00 TO NODE     51.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   17608.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    8024.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1640.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1687.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.270
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.925; 30-MINUTE = 0.925;  1-HOUR = 0.925
    3-HOUR = 0.989;    6-HOUR = 0.994; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE     51.00 TO NODE     52.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2815.00; DOWNSTREAM ELEVATION(FT) =    2180.00
  CHANNEL LENGTH(FT) =  10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     51.10 TO NODE     52.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   12315.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    7765.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1360.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     452.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.430
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.980; 30-MINUTE = 0.980;  1-HOUR = 0.980
    3-HOUR = 0.997;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     52.00 TO NODE     53.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).
```

```
  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2180.00; DOWNSTREAM ELEVATION(FT) =    2045.00
  CHANNEL LENGTH(FT) =    6652.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     52.10 TO NODE     53.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   19986.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   11194.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     540.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     495.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.978; 30-MINUTE = 0.978;  1-HOUR = 0.978
    3-HOUR = 0.997;    6-HOUR = 0.998; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 2 STORED IN FILE [AREA5.DNA                     ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [AREA5.DAT   ]   Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
40.00	51.00	Subarea (UH) Added to Stream #2	0.0	2653.9	16.333		
51.00	52.00	Convex Routing: Stream #2	2653.9	2634.2	16.583		
51.10	52.00	Subarea (UH) Added to Stream #2	2634.2	3316.3	16.500		
52.00	53.00	Convex Routing: Stream #2	3316.3	3173.9	16.667		
52.10	53.00	Subarea (UH) Added to Stream #3	0.0	647.7	16.583		
53.00	53.00	Stream #3 Added to: Stream #2	3173.9	3821.6	16.667		
53.00	53.00	View: Stream #2		3821.6	16.667	631.33	3
53.00	53.00	Stream #2 Added to: Stream #1	0.0	3821.6	16.667		
53.00	53.00	View: Stream #1		3821.6	16.667	631.33	3
53.00	53.00	Store: Stream #2	3821.6	3821.6	16.667		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

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                        Analysis prepared by:

                               Stantec




----------------------------------------------------------------------------
  FILE NAME: AREA6.DAT
  TIME/DATE OF STUDY: 13:11 11/04/2008


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE     60.00 TO NODE     61.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   12315.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6295.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1920.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1426.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.180; LOW LOSS FRACTION = 0.260
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.936; 30-MINUTE = 0.936;  1-HOUR = 0.936
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE     61.00 TO NODE     62.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2680.00; DOWNSTREAM ELEVATION(FT) =    2470.00
  CHANNEL LENGTH(FT) =    3994.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     61.10 TO NODE     62.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    6851.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3676.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     670.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     107.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.300; LOW LOSS FRACTION = 0.400
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     63.00 TO NODE     64.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   10679.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5228.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    2320.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     366.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.260
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     64.00 TO NODE     62.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2680.00; DOWNSTREAM ELEVATION(FT) =    2470.00
  CHANNEL LENGTH(FT) =    3660.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     64.10 TO NODE     62.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    5484.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2605.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     690.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =      93.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.996; 30-MINUTE = 0.996;  1-HOUR = 0.996
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
```

```
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     65.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2470.00; DOWNSTREAM ELEVATION(FT) =    2180.00
  CHANNEL LENGTH(FT) =    6766.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     62.10 TO NODE     65.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   14432.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6135.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1020.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     353.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     65.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     65.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     65.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     66.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2180.00; DOWNSTREAM ELEVATION(FT) =    2040.00
  CHANNEL LENGTH(FT) =    6805.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
```

```
  FLOW PROCESS FROM NODE     65.10 TO NODE     66.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERCOURSE LENGTH =    7968.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4691.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     180.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     166.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.80; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.993; 30-MINUTE = 0.993;  1-HOUR = 0.993
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     67.00 TO NODE     68.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    6479.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3472.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     490.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     254.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.270
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.989; 30-MINUTE = 0.989;  1-HOUR = 0.989
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     68.00 TO NODE     69.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2670.00; DOWNSTREAM ELEVATION(FT) =    2180.00
  CHANNEL LENGTH(FT) =    9751.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     68.10 TO NODE     69.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   11295.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5893.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     720.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     556.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.430
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
```

```
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.975; 30-MINUTE = 0.975;  1-HOUR = 0.975
    3-HOUR = 0.996;    6-HOUR = 0.998; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     66.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2180.00; DOWNSTREAM ELEVATION(FT) =    2040.00
  CHANNEL LENGTH(FT) =    6588.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     69.10 TO NODE     66.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERCOURSE LENGTH =   10093.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5800.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     140.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     246.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.989; 30-MINUTE = 0.989;  1-HOUR = 0.989
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
```

```
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.50 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2040.00; DOWNSTREAM ELEVATION(FT) =    2000.00
  CHANNEL LENGTH(FT) =    1241.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.10 TO NODE     66.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    7902.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    1114.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     160.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     166.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.660; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.993; 30-MINUTE = 0.993;  1-HOUR = 0.993
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000

****************************************************************************
  FLOW PROCESS FROM NODE     66.50 TO NODE     66.50 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.50 TO NODE     66.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     66.50 TO NODE     66.50 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [area6.dna                      ]

============================================================================
============================================================================

+----------------------------------------------------------------------------------------------------------------------+
|                                         * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                      |
|INPUT FILENAME: [AREA6.DAT      ]                                                                     Page:   1 of    |
+------------------+---------------------------------+-----------------------+-------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE # | HYDROLOGIC/HYDRAULIC PROCESS   |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+------------------+---------------------------------+-----------------------+-------------+-------------+-----------+
|    60.00      61.00| Subarea (UH) Added to Stream #1|       0.0      2650.7|      16.333 |             |           |
|    61.00      62.00| Convex Routing:      Stream #1|    2650.7      2649.3|      16.500 |             |           |
|    61.10      62.00| Subarea (UH) Added to Stream #2|       0.0       206.4|      16.333 |             |           |
|    62.00      62.00| Stream #2 Added to:   Stream #1|    2649.3      2855.6|      16.500 |             |           |
|    62.00      62.00| View:                Stream #1|                2855.6|      16.500 |      388.72|     3     |
+------------------+---------------------------------+-----------------------+-------------+-------------+-----------+
|    62.00      62.00| Zero Out:            Stream #2|     206.4         0.0|             |             |           |
|    63.00      64.00| Subarea (UH) Added to Stream #2|       0.0       733.2|      16.333 |             |           |
|    64.00      62.00| Convex Routing:      Stream #2|     733.2       731.6|      16.500 |             |           |
|    64.10      62.00| Subarea (UH) Added to Stream #3|       0.0       177.9|      16.083 |             |           |
|    62.00      62.00| Stream #3 Added to:   Stream #2|     731.6       903.0|      16.500 |             |           |
+------------------+---------------------------------+-----------------------+-------------+-------------+-----------+
|    62.00      62.00| Zero Out:            Stream #3|     177.9         0.0|             |             |           |
|    62.00      62.00| Stream #2 Added to:   Stream #1|    2855.6      3758.7|      16.500 |             |           |
|    62.00      62.00| View:                Stream #1|                3758.7|      16.500 |      503.07|     3     |
|    62.00      62.00| Zero Out:            Stream #2|     903.0         0.0|             |             |           |
|    62.00      65.00| Convex Routing:      Stream #1|    3758.7      3725.0|      16.583 |             |           |
+------------------+---------------------------------+-----------------------+-------------+-------------+-----------+
```

62.10	65.00	Subarea (UH) Added to	Stream #2	0.0	591.9	16.333		
65.00	65.00	Stream #2 Added to:	Stream #1	3725.0	4140.7	16.583		
65.00	65.00	View:	Stream #1		4140.7	16.583	579.27	3
65.00	65.00	Zero Out:	Stream #2	591.9	0.0			
65.00	66.00	Convex Routing:	Stream #1	4140.7	4070.3	16.667		
65.10	66.00	Subarea (UH) Added to	Stream #5	0.0	295.9	16.333		
66.00	66.00	Stream #5 Added to:	Stream #1	4070.3	4253.1	16.667		
66.00	66.00	View:	Stream #1		4253.1	16.667	615.20	3
66.00	66.00	Zero Out:	Stream #5	295.9	0.0			
67.00	68.00	Subarea (UH) Added to	Stream #2	0.0	511.5	16.333		
68.00	69.00	Convex Routing:	Stream #2	511.5	506.4	16.667		
68.10	69.00	Subarea (UH) Added to	Stream #3	0.0	968.4	16.333		
69.00	69.00	Stream #3 Added to:	Stream #2	506.4	1429.4	16.500		
69.00	69.00	View:	Stream #2		1429.4	16.500	185.97	3
69.00	69.00	Zero Out:	Stream #3	968.4	0.0			
69.00	66.00	Convex Routing:	Stream #2	1429.4	1382.5	16.667		
69.10	66.00	Subarea (UH) Added to	Stream #5	0.0	377.2	16.333		
66.00	66.00	Stream #5 Added to:	Stream #2	1382.5	1698.8	16.667		
66.00	66.00	Stream #2 Added to:	Stream #1	4253.1	5951.9	16.667		
66.00	66.00	View:	Stream #1		5951.9	16.667	854.34	3
66.00	66.00	Zero Out:	Stream #2	1698.8	0.0			
66.00	66.50	Convex Routing:	Stream #1	5951.9	5889.7	16.667		
66.10	66.50	Subarea (UH) Added to	Stream #2	0.0	266.1	16.333		
66.50	66.50	Stream #2 Added to:	Stream #1	5889.7	6000.1	16.667		
66.50	66.50	View:	Stream #1		6000.1	16.667	887.59	3

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [AREA6.DAT] Page: 2 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
66.50	66.50	Store:	Stream #1	6000.1	6000.1	16.667		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

              F L O O D   R O U T I N G   A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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            Ver. 15.0  Release Date: 04/01/2008  License ID 1535

                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: AREA7.DAT
  TIME/DATE OF STUDY: 13:11 11/04/2008

                          ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     70.00 TO NODE     71.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    7740.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4234.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     470.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     291.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.180; LOW LOSS FRACTION = 0.260
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.987; 30-MINUTE = 0.987;  1-HOUR = 0.987
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE     71.00 TO NODE     72.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2570.00; DOWNSTREAM ELEVATION(FT) =    2200.00
  CHANNEL LENGTH(FT) =    6913.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     71.10 TO NODE     72.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    8964.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4687.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     680.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     328.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.430
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.985; 30-MINUTE = 0.985;  1-HOUR = 0.985
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE     72.00 TO NODE     72.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     72.00 TO NODE     72.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     72.00 TO NODE     72.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     72.00 TO NODE     73.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2200.00; DOWNSTREAM ELEVATION(FT) =    2050.00
  CHANNEL LENGTH(FT) =    6313.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     72.10 TO NODE     73.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    8809.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4662.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     350.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     246.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.989; 30-MINUTE = 0.989;  1-HOUR = 0.989
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE     73.00 TO NODE     73.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     73.00 TO NODE     73.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     73.00 TO NODE     73.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     73.00 TO NODE     74.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2050.00; DOWNSTREAM ELEVATION(FT) =    2030.00
  CHANNEL LENGTH(FT) =     728.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     75.00 TO NODE     76.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
==============================================================================
  WATERCOURSE LENGTH =   12625.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5849.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     540.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     487.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.978; 30-MINUTE = 0.978;  1-HOUR = 0.978
    3-HOUR = 0.997;    6-HOUR = 0.998; 24-HOUR = 0.999


******************************************************************************
  FLOW PROCESS FROM NODE     76.00 TO NODE     77.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2500.00; DOWNSTREAM ELEVATION(FT) =    2180.00
  CHANNEL LENGTH(FT) =    6103.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     76.10 TO NODE     77.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
==============================================================================
  WATERCOURSE LENGTH =    7602.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4050.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     780.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     305.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.240; LOW LOSS FRACTION = 0.330
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.986; 30-MINUTE = 0.986;  1-HOUR = 0.986
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


******************************************************************************
  FLOW PROCESS FROM NODE     77.00 TO NODE     77.00 IS CODE =   7
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 3<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     77.00 TO NODE     77.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 3 HYDROGRAPH<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     77.00 TO NODE     77.00 IS CODE =   6
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     77.00 TO NODE     78.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2180.00; DOWNSTREAM ELEVATION(FT) =    2050.00
  CHANNEL LENGTH(FT) =    5723.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
```

```
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     77.10 TO NODE     78.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERCOURSE LENGTH =   12003.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6262.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     475.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     304.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.310; LOW LOSS FRACTION = 0.420
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.986; 30-MINUTE = 0.986;  1-HOUR = 0.986
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     78.00 TO NODE     78.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 3<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     78.00 TO NODE     78.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 3 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     78.00 TO NODE     78.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     78.00 TO NODE     74.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2050.00; DOWNSTREAM ELEVATION(FT) =    2030.00
  CHANNEL LENGTH(FT) =     425.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     74.00 TO NODE     74.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     74.00 TO NODE     74.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     74.00 TO NODE     74.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     74.00 TO NODE     79.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
```

```
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2030.00; DOWNSTREAM ELEVATION(FT) =    1960.00
  CHANNEL LENGTH(FT) =    3032.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     74.10 TO NODE     79.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   12866.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    7337.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     400.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     442.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.980; 30-MINUTE = 0.980;  1-HOUR = 0.980
    3-HOUR = 0.997;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     79.00 TO NODE     79.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     79.00 TO NODE     79.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     79.00 TO NODE     79.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 2 STORED IN FILE [AREA7.DNA                     ]

============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [AREA7.DAT   ]   Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
70.00	71.00	Subarea (UH) Added to Stream #2	0.0	585.3	16.333		
71.00	72.00	Convex Routing: Stream #2	585.3	577.9	16.583		
71.10	72.00	Subarea (UH) Added to Stream #3	0.0	613.4	16.333		
72.00	72.00	Stream #3 Added to: Stream #2	577.9	1170.1	16.500		
72.00	72.00	View: Stream #2		1170.1	16.500	146.70	3
72.00	72.00	Zero Out: Stream #3	613.4	0.0			
72.00	73.00	Convex Routing: Stream #2	1170.1	1111.1	16.667		
72.10	73.00	Subarea (UH) Added to Stream #3	0.0	447.9	16.333		
73.00	73.00	Stream #3 Added to: Stream #2	1111.1	1462.4	16.500		
73.00	73.00	View: Stream #2		1462.4	16.500	199.88	3
73.00	73.00	Zero Out: Stream #3	447.9	0.0			
73.00	74.00	Convex Routing: Stream #2	1462.4	1432.8	16.500		
75.00	76.00	Subarea (UH) Added to Stream #3	0.0	799.5	16.333		
76.00	77.00	Convex Routing: Stream #3	799.5	792.2	16.583		
76.10	77.00	Subarea (UH) Added to Stream #4	0.0	600.2	16.333		
77.00	77.00	Stream #4 Added to: Stream #3	792.2	1363.8	16.500		
77.00	77.00	View: Stream #3		1363.8	16.500	178.59	3
77.00	77.00	Zero Out: Stream #4	600.2	0.0			
77.00	78.00	Convex Routing: Stream #3	1363.8	1253.6	16.667		
77.10	78.00	Subarea (UH) Added to Stream #4	0.0	502.5	16.333		
78.00	78.00	Stream #4 Added to: Stream #3	1253.6	1627.1	16.667		
78.00	78.00	View: Stream #3		1627.1	16.667	245.74	3
78.00	78.00	Zero Out: Stream #4	502.5	0.0			
78.00	74.00	Convex Routing: Stream #3	1627.1	1625.6	16.667		
74.00	74.00	Stream #3 Added to: Stream #2	1432.8	3038.9	16.500		

74.00	74.00	View:	Stream #2		3038.9	16.500	445.62	3
74.00	74.00	Zero Out:	Stream #3	1625.6	0.0			
74.00	79.00	Convex Routing:	Stream #2	3038.9	3006.0	16.583		
74.10	79.00	Subarea (UH) Added to	Stream #3	0.0	657.7	16.333		
79.00	79.00	Stream #3 Added to:	Stream #2	3006.0	3576.4	16.583		
79.00	79.00	View:	Stream #2		3576.4	16.583	540.91	3
79.00	79.00	Store:	Stream #2	3576.4	3576.4	16.583		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

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                          Analysis prepared by:

                                 Stantec




----------------------------------------------------------------------------
  FILE NAME: A8.DAT
  TIME/DATE OF STUDY: 13:11 11/04/2008


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE     80.00 TO NODE     81.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =   13409.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6657.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1070.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =     351.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.210; LOW LOSS FRACTION = 0.290
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE     81.00 TO NODE     82.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2150.00; DOWNSTREAM ELEVATION(FT) =    1937.00
  CHANNEL LENGTH(FT) =    8110.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     81.10 TO NODE     82.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   19314.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    9077.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1283.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1070.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.290; LOW LOSS FRACTION = 0.400
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.952; 30-MINUTE = 0.952;  1-HOUR = 0.952
    3-HOUR = 0.993;    6-HOUR = 0.996; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE     82.00 TO NODE     82.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     82.00 TO NODE     82.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     82.00 TO NODE     82.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     82.00 TO NODE     93.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   50.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    1937.00; DOWNSTREAM ELEVATION(FT) =    1845.00
  CHANNEL LENGTH(FT) =    8567.00      MANNING'S FACTOR = 0.030
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [area9.dna   ] TO STREAM #2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [a8.dna                       ]

============================================================================
============================================================================

+-------------------------------------------------------------------------------------------------------------------+
|                                       * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                     |
|INPUT FILENAME: [A8.DAT         ]                                                                   Page:   1 of    |
+------------------+---------------------------------+-----------------------+-------------+-------------+------------+
|UPSTREAM  DOWNSTREAM|                                 | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|            |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS    |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+------------------+---------------------------------+-----------------------+-------------+-------------+------------+
|    80.00      81.00| Subarea (UH) Added to Stream #1|       0.0       631.5|     16.333 |             |            |
|    81.00      82.00| Convex Routing:       Stream #1|     631.5       611.4|     16.667 |             |            |
|    81.10      82.00| Subarea (UH) Added to Stream #2|       0.0      1470.1|     16.333 |             |            |
|    82.00      82.00| Stream #2 Added to:   Stream #1|     611.4      2025.4|     16.667 |             |            |
|    82.00      82.00| View:                 Stream #1|                2025.4|     16.667 |       327.18|      3     |
+------------------+---------------------------------+-----------------------+-------------+-------------+------------+
|    82.00      82.00| Zero Out:             Stream #2|    1470.1         0.0|            |             |            |
|    82.00      93.00| Convex Routing:       Stream #1|    2025.4      1998.6|     16.917 |             |            |
|    93.00      93.00| Read/Add Hydrograph:  Stream #2|       0.0      7003.4|     16.917 |             |            |
|    93.00      93.00| Stream #2 Added to:   Stream #1|    1998.6      9002.0|     16.917 |             |            |
|    93.00      93.00| View:                 Stream #1|                9002.0|     16.917 |      1892.31|      3     |
+------------------+---------------------------------+-----------------------+-------------+-------------+------------+
|    93.00      93.00| Store:                Stream #1|    9002.0      9002.0|     16.917 |             |            |
+------------------+---------------------------------+-----------------------+-------------+-------------+------------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL                                |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                       |
+-------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

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                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: AREA9.DAT
  TIME/DATE OF STUDY: 13:20 11/04/2008


                          ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE     90.00 TO NODE     91.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   26139.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   12633.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1870.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1426.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.270
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.936; 30-MINUTE = 0.936;  1-HOUR = 0.936
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997

****************************************************************************
  FLOW PROCESS FROM NODE     91.00 TO NODE     92.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    2290.00; DOWNSTREAM ELEVATION(FT) =    1880.00
  CHANNEL LENGTH(FT) =  10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     91.10 TO NODE     92.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   39166.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   18246.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1640.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    3747.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.240; LOW LOSS FRACTION = 0.330
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.833; 30-MINUTE = 0.833;  1-HOUR = 0.833
    3-HOUR = 0.975;    6-HOUR = 0.987; 24-HOUR = 0.992

****************************************************************************
  FLOW PROCESS FROM NODE     92.00 TO NODE     92.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE     92.00 TO NODE     92.00 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     92.00 TO NODE     92.00 IS CODE =   6
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     92.00 TO NODE     93.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   25.00     CHANNEL Z =  5.00
  UPSTREAM ELEVATION(FT) =    1880.00; DOWNSTREAM ELEVATION(FT) =    1845.00
  CHANNEL LENGTH(FT) =    2347.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     92.10 TO NODE     93.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
==============================================================================
  WATERCOURSE LENGTH =   15967.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   10526.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     280.000 FEET
  BASIN FACTOR = 0.035
  WATERSHED AREA =    1558.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.930; 30-MINUTE = 0.930;  1-HOUR = 0.930
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


******************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE =   7
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 2 HYDROGRAPH<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE     93.00 TO NODE     93.00 IS CODE = 10.3
------------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
==============================================================================

      STREAM HYDROGRAPH # 2 STORED IN FILE [AREA9.DNA                    ]

==============================================================================
==============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [AREA9.DAT] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
90.00	91.00	Subarea (UH) Added to Stream #2	0.0	1963.3	16.583		
91.00	92.00	Convex Routing: Stream #2	1963.3	1958.0	16.917		
91.10	92.00	Subarea (UH) Added to Stream #3	0.0	3666.4	16.833		
92.00	92.00	Stream #3 Added to: Stream #2	1958.0	5624.4	16.917		
92.00	92.00	View: Stream #2		5624.4	16.917	1234.56	3
92.00	92.00	Zero Out: Stream #3	3666.4	0.0			
92.00	93.00	Convex Routing: Stream #2	5624.4	5605.2	16.917		
92.10	93.00	Subarea (UH) Added to Stream #3	0.0	1957.8	16.583		
93.00	93.00	Stream #3 Added to: Stream #2	5605.2	6973.9	16.750		

93.00	93.00	View:	Stream #2		6973.9	16.750	1565.14	3
93.00	93.00	Store:	Stream #2	6973.9	6973.9	16.750		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

```
****************************************************************************

              F L O O D   R O U T I N G   A N A L Y S I S
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                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: MIDDLE.DAT
  TIME/DATE OF STUDY: 15:05 11/06/2008


                          ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =    5635.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2271.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     124.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     102.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000

****************************************************************************
  FLOW PROCESS FROM NODE    522.00 TO NODE    524.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    4500.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2069.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      36.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     158.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.993; 30-MINUTE = 0.993;  1-HOUR = 0.993
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    516.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     182.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2201.15; DOWNSTREAM ELEVATION(FT) =    2197.26
  PIPE DIAMETER(FT) =   3.00
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    524.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).
```

```
  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   80.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2197.26; DOWNSTREAM ELEVATION(FT) =    2165.00
  CHANNEL LENGTH(FT) =    4500.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    492.00 TO NODE    494.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    4191.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    1376.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      95.850 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =      83.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.996; 30-MINUTE = 0.996;  1-HOUR = 0.996
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    494.00 TO NODE    496.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     186.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2187.15; DOWNSTREAM ELEVATION(FT) =    2184.47
  PIPE DIAMETER(FT) =   3.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    496.00 TO NODE    524.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   80.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2184.47; DOWNSTREAM ELEVATION(FT) =    2165.00
  CHANNEL LENGTH(FT) =    2558.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
```

```
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    526.00 IS CODE =   4
------------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
==============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2165.00; DOWNSTREAM ELEVATION(FT) =    2164.99
  PIPE DIAMETER(FT) =   8.14
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    534.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  100.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2164.99; DOWNSTREAM ELEVATION(FT) =    2160.00
  CHANNEL LENGTH(FT) =    2819.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    534.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
==============================================================================
  WATERCOURSE LENGTH =   10308.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4916.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     377.000 FEET
  BASIN FACTOR = 0.086
  WATERSHED AREA =     655.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.230; LOW LOSS FRACTION = 0.320
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.971; 30-MINUTE = 0.971;  1-HOUR = 0.971
    3-HOUR = 0.996;    6-HOUR = 0.998; 24-HOUR = 0.999


******************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   7
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   6
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    558.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  250.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2160.00; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =   10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    542.00 TO NODE    544.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =   17024.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   11089.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     458.000 FEET
  BASIN FACTOR = 0.068
  WATERSHED AREA =    2382.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.280; LOW LOSS FRACTION = 0.380
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.894; 30-MINUTE = 0.894;  1-HOUR = 0.894
    3-HOUR = 0.984;    6-HOUR = 0.992; 24-HOUR = 0.995


****************************************************************************
  FLOW PROCESS FROM NODE    544.00 TO NODE    546.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     215.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2060.84; DOWNSTREAM ELEVATION(FT) =    2056.48
  PIPE DIAMETER(FT) =   3.50
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    546.00 TO NODE    558.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  300.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2056.48; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =    4584.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    536.00 TO NODE    558.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =   11492.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    5411.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     110.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =    1937.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.914; 30-MINUTE = 0.914;  1-HOUR = 0.914
    3-HOUR = 0.987;    6-HOUR = 0.994; 24-HOUR = 0.996


****************************************************************************
  FLOW PROCESS FROM NODE    482.00 TO NODE    484.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERCOURSE LENGTH =   10151.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    6367.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     130.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =     370.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.430
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
```

```
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.983; 30-MINUTE = 0.983;  1-HOUR = 0.983
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    484.00 TO NODE    486.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #4<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 4 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     189.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2059.60; DOWNSTREAM ELEVATION(FT) =    2056.42
  PIPE DIAMETER(FT) =   3.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    486.00 TO NODE    558.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #4 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 4 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  150.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2056.42; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =    6202.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    504.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERCOURSE LENGTH =   24948.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    8520.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     777.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =    2473.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.310; LOW LOSS FRACTION = 0.420
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.890; 30-MINUTE = 0.890;  1-HOUR = 0.890
    3-HOUR = 0.983;    6-HOUR = 0.992; 24-HOUR = 0.995


****************************************************************************
  FLOW PROCESS FROM NODE    504.00 TO NODE    506.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #5<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 5 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2119.14; DOWNSTREAM ELEVATION(FT) =    2119.13
  PIPE DIAMETER(FT) =   8.90
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    506.00 TO NODE    558.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #5 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 5 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
```

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  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  150.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2122.99; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =   10000.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    551.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [area2.dna   ] TO STREAM #3<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    552.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2078.33; DOWNSTREAM ELEVATION(FT) =    2078.09
  PIPE DIAMETER(FT) =  15.03
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    552.00 TO NODE    558.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  350.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2078.09; DOWNSTREAM ELEVATION(FT) =    2013.00
  CHANNEL LENGTH(FT) =    6929.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   7
```

```
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  500.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2013.00; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    7928.88      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    562.00 TO NODE    564.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    4636.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2021.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     102.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     155.300 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.993; 30-MINUTE = 0.993;  1-HOUR = 0.993
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    564.00 TO NODE    566.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     189.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    2051.71; DOWNSTREAM ELEVATION(FT) =    2049.20
  PIPE DIAMETER(FT) =   8.00
============================================================================


****************************************************************************
```

```
 FLOW PROCESS FROM NODE    566.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
 >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
 THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
 ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
 (Reference: the National Engineering Handbook, Hydrology,
 Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

 ASSUMED REGULAR CHANNEL INFORMATION:
 BASEWIDTH(FT) =  200.00     CHANNEL Z = 10.00
 UPSTREAM ELEVATION(FT) =    2049.20; DOWNSTREAM ELEVATION(FT) =    1940.00
 CHANNEL LENGTH(FT) =    8343.12       MANNING'S FACTOR = 0.035
 CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    572.00 TO NODE    574.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
 WATERCOURSE LENGTH =    5001.000 FEET
 LENGTH FROM CONCENTRATION POINT TO CENTROID =    2473.000 FEET
 ELEVATION VARIATION ALONG WATERCOURSE =     115.000 FEET
 BASIN FACTOR = 0.040
 WATERSHED AREA =     233.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
 VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
 MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
 SPECIFIED PEAK RAINFALL DEPTHS(INCH):
 5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
   3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
 PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
 5-MINUTE = 0.990; 30-MINUTE = 0.990;  1-HOUR = 0.990
   3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
 FLOW PROCESS FROM NODE    574.00 TO NODE    576.00 IS CODE =   4
----------------------------------------------------------------------------
 >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
 MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
 STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
 VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
 EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
 OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
        UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
        (0.938)(DIAMETER):

 PIPELENGTH(FT) =     186.00     MANNINGS FACTOR = 0.024
 UPSTREAM ELEVATION(FT) =    2049.42; DOWNSTREAM ELEVATION(FT) =    2047.05
 PIPE DIAMETER(FT) =  12.50
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    576.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
 >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
 THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
 ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
 (Reference: the National Engineering Handbook, Hydrology,
 Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

 ASSUMED REGULAR CHANNEL INFORMATION:
 BASEWIDTH(FT) =  250.00     CHANNEL Z = 10.00
 UPSTREAM ELEVATION(FT) =    2047.05; DOWNSTREAM ELEVATION(FT) =    1940.00
 CHANNEL LENGTH(FT) =    7462.00       MANNING'S FACTOR = 0.035
 CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    566.00 TO NODE    789.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
 WATERCOURSE LENGTH =    8343.000 FEET
 LENGTH FROM CONCENTRATION POINT TO CENTROID =    4684.000 FEET
 ELEVATION VARIATION ALONG WATERCOURSE =     122.000 FEET
 BASIN FACTOR = 0.040
 WATERSHED AREA =     895.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
 VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
 MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
 SPECIFIED PEAK RAINFALL DEPTHS(INCH):
 5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
   3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
 PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
 5-MINUTE = 0.960; 30-MINUTE = 0.960;  1-HOUR = 0.960
```

```
    3-HOUR = 0.994;    6-HOUR = 0.997; 24-HOUR = 0.998

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    781.00 TO NODE    781.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [a4.dna      ] TO STREAM #2<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    783.00 TO NODE    783.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [area5.dna   ] TO STREAM #3<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    785.00 TO NODE    785.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [area6.dna   ] TO STREAM #4<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    787.00 TO NODE    787.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [area7.dna   ] TO STREAM #5<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    781.00 TO NODE    782.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2030.91; DOWNSTREAM ELEVATION(FT) =    2030.79
  PIPE DIAMETER(FT) =  19.74
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    782.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  500.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2030.79; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    9681.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    783.00 TO NODE    784.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    2023.00; DOWNSTREAM ELEVATION(FT) =    2022.99
  PIPE DIAMETER(FT) =   9.37
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    784.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  100.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    2023.00; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    8854.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    785.00 TO NODE    786.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #4<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 4 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      34.50     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    1989.82; DOWNSTREAM ELEVATION(FT) =    1989.39
  PIPE DIAMETER(FT) =  17.77
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    786.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #4 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 4 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  500.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1989.00; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    6046.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    787.00 TO NODE    788.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #5<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 5 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.40     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    1960.74; DOWNSTREAM ELEVATION(FT) =    1960.47
  PIPE DIAMETER(FT) =  11.19
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    788.00 TO NODE    789.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #5 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 5 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  200.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1960.50; DOWNSTREAM ELEVATION(FT) =    1940.00
  CHANNEL LENGTH(FT) =    2853.50      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    789.00 IS CODE =   6
----------------------------------------------------------------------------
```

```
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    789.00 TO NODE    676.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  800.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1940.00; DOWNSTREAM ELEVATION(FT) =    1901.22
  CHANNEL LENGTH(FT) =    3919.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    672.00 TO NODE    676.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
==============================================================================
  WATERCOURSE LENGTH =    3919.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3541.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      30.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     142.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.994; 30-MINUTE = 0.994;  1-HOUR = 0.994
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


******************************************************************************
  FLOW PROCESS FROM NODE    676.00 TO NODE    676.00 IS CODE =   7
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    676.00 TO NODE    676.00 IS CODE =   6
------------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    676.00 TO NODE    678.00 IS CODE =   4
------------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
==============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      32.00     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    1901.22; DOWNSTREAM ELEVATION(FT) =    1900.85
  PIPE DIAMETER(FT) =  17.77
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    678.00 TO NODE    696.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  400.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1900.85; DOWNSTREAM ELEVATION(FT) =    1841.18
  CHANNEL LENGTH(FT) =    7588.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    696.00 IS CODE = 10.2
----------------------------------------------------------------------------
  >>>>>ADD RUNOFF HYDROGRAPH FROM A FILE: [a8.dna      ] TO STREAM #2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    696.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    696.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    698.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =      37.10     MANNINGS FACTOR = 0.035
  UPSTREAM ELEVATION(FT) =    1841.18; DOWNSTREAM ELEVATION(FT) =    1840.91
  PIPE DIAMETER(FT) =  10.34
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    698.00 TO NODE    778.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  300.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1840.91; DOWNSTREAM ELEVATION(FT) =    1832.00
  CHANNEL LENGTH(FT) =    1077.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    682.00 TO NODE    688.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    9519.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    4686.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     135.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     786.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.965; 30-MINUTE = 0.965;  1-HOUR = 0.965
    3-HOUR = 0.995;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE    688.00 TO NODE    778.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
```

```
  BASEWIDTH(FT) =  300.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1870.00; DOWNSTREAM ELEVATION(FT) =    1832.00
  CHANNEL LENGTH(FT) =    4272.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    688.00 TO NODE    778.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    4272.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    1686.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      35.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     239.300 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.989; 30-MINUTE = 0.989;  1-HOUR = 0.989
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 1.000

****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    738.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  500.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1832.00; DOWNSTREAM ELEVATION(FT) =    1800.00
  CHANNEL LENGTH(FT) =    6748.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    738.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    6748.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3299.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      35.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     199.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.991; 30-MINUTE = 0.991;  1-HOUR = 0.991
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000
```

****

FLOW PROCESS FROM NODE 738.00 TO NODE 738.00 IS CODE = 7

>>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<

****

FLOW PROCESS FROM NODE 738.00 TO NODE 738.00 IS CODE = 6

>>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<

****

FLOW PROCESS FROM NODE 738.00 TO NODE 738.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [MIDDLE.DAT] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
512.00	514.00	Subarea (UH) Added to	Stream #1	0.0	239.0	16.250		
522.00	524.00	Subarea (UH) Added to	Stream #2	0.0	361.5	16.333		
514.00	516.00	Pipe Flow Routing:	Stream #1	239.0	52.8	16.000		
516.00	524.00	Convex Routing:	Stream #1	52.8	52.8	19.333		
492.00	494.00	Subarea (UH) Added to	Stream #3	0.0	237.8	16.250		
494.00	496.00	Pipe Flow Routing:	Stream #3	237.8	43.4	15.917		
496.00	524.00	Convex Routing:	Stream #3	43.4	43.4	19.083		
524.00	524.00	Stream #3 Added to:	Stream #1	52.8	96.2	19.083		
524.00	524.00	Stream #2 Added to:	Stream #1	96.2	440.2	16.333		
524.00	524.00	Zero Out:	Stream #3	43.4	0.0			
524.00	524.00	Zero Out:	Stream #2	361.5	0.0			
524.00	526.00	Pipe Flow Routing:	Stream #1	440.2	62.8	15.750		
526.00	534.00	Convex Routing:	Stream #1	62.8	62.8	20.250		
532.00	534.00	Subarea (UH) Added to	Stream #2	0.0	745.2	16.750		
534.00	534.00	Stream #2 Added to:	Stream #1	62.8	807.3	16.750		
534.00	534.00	Zero Out:	Stream #2	745.2	0.0			
534.00	558.00	Convex Routing:	Stream #1	807.3	770.9	17.417		
542.00	544.00	Subarea (UH) Added to	Stream #2	0.0	1920.3	17.083		
544.00	546.00	Pipe Flow Routing:	Stream #2	1920.3	77.6	9.500		
546.00	558.00	Convex Routing:	Stream #2	77.6	77.6	13.500		
536.00	558.00	Subarea (UH) Added to	Stream #3	0.0	2628.4	16.500		
482.00	484.00	Subarea (UH) Added to	Stream #4	0.0	482.3	16.583		
484.00	486.00	Pipe Flow Routing:	Stream #4	482.3	46.9	15.250		
486.00	558.00	Convex Routing:	Stream #4	46.9	46.9	20.000		
502.00	504.00	Subarea (UH) Added to	Stream #5	0.0	2842.3	16.667		
504.00	506.00	Pipe Flow Routing:	Stream #5	2842.3	79.6	9.333		
506.00	558.00	Convex Routing:	Stream #5	79.6	79.6	13.167		
558.00	558.00	Stream #3 Added to:	Stream #1	770.9	2869.2	16.583		
558.00	558.00	Zero Out:	Stream #3	2628.4	0.0			
551.00	551.00	Read/Add Hydrograph:	Stream #3	0.0	3615.0	16.750		
551.00	552.00	Pipe Flow Routing:	Stream #3	3615.0	1576.8	16.250		
552.00	558.00	Convex Routing:	Stream #3	1576.8	1576.8	18.500		
558.00	558.00	Stream #5 Added to:	Stream #1	2869.2	2948.8	16.583		
558.00	558.00	Stream #4 Added to:	Stream #1	2948.8	2995.5	16.583		
558.00	558.00	Stream #3 Added to:	Stream #1	2995.5	4426.5	16.583		
558.00	558.00	Stream #2 Added to:	Stream #1	4426.5	4504.1	16.583		
558.00	558.00	Zero Out:	Stream #5	79.6	0.0			
558.00	558.00	Zero Out:	Stream #4	46.9	0.0			
558.00	558.00	Zero Out:	Stream #3	1576.8	0.0			
558.00	558.00	Zero Out:	Stream #2	77.6	0.0			

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [MIDDLE.DAT] Page: 2 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
558.00	789.00	Convex Routing:	Stream #1	4504.1	4272.2	17.000		
562.00	564.00	Subarea (UH) Added to	Stream #2	0.0	397.2	16.250		

564.00	566.00	Pipe Flow Routing:	Stream #2	397.2	394.2	16.250		
566.00	789.00	Convex Routing:	Stream #2	394.2	306.7	16.833		
572.00	574.00	Subarea (UH) Added to	Stream #3	0.0	553.1	16.250		
574.00	576.00	Pipe Flow Routing:	Stream #3	553.1	549.5	16.250		
576.00	789.00	Convex Routing:	Stream #3	549.5	453.6	16.750		
566.00	789.00	Subarea (UH) Added to	Stream #4	0.0	1526.9	16.417		
789.00	789.00	Stream #4 Added to:	Stream #1	4272.2	4734.3	17.000		
789.00	789.00	Stream #3 Added to:	Stream #1	4734.3	5052.0	16.917		
789.00	789.00	Stream #2 Added to:	Stream #1	5052.0	5335.0	16.917		
789.00	789.00	Zero Out:	Stream #4	1526.9	0.0			
789.00	789.00	Zero Out:	Stream #3	453.6	0.0			
789.00	789.00	Zero Out:	Stream #2	306.7	0.0			
781.00	781.00	Read/Add Hydrograph:	Stream #2	0.0	7318.4	16.750		
783.00	783.00	Read/Add Hydrograph:	Stream #3	0.0	3821.6	16.667		
785.00	785.00	Read/Add Hydrograph:	Stream #4	0.0	6000.1	16.667		
787.00	787.00	Read/Add Hydrograph:	Stream #5	0.0	3576.4	16.583		
781.00	782.00	Pipe Flow Routing:	Stream #2	7318.4	2306.6	16.250		
782.00	789.00	Convex Routing:	Stream #2	2306.6	2306.6	18.667		
783.00	784.00	Pipe Flow Routing:	Stream #3	3821.6	91.3	8.500		
784.00	789.00	Convex Routing:	Stream #3	91.3	91.3	11.917		
785.00	786.00	Pipe Flow Routing:	Stream #4	6000.1	3176.9	16.417		
786.00	789.00	Convex Routing:	Stream #4	3176.9	3176.9	18.083		
787.00	788.00	Pipe Flow Routing:	Stream #5	3576.4	756.8	16.000		
788.00	789.00	Convex Routing:	Stream #5	756.8	756.8	17.667		
789.00	789.00	Stream #5 Added to:	Stream #1	5335.0	6091.8	16.917		
789.00	789.00	Stream #4 Added to:	Stream #1	6091.8	9249.9	16.917		
789.00	789.00	Stream #3 Added to:	Stream #1	9249.9	9341.2	16.917		
789.00	789.00	Stream #2 Added to:	Stream #1	9341.2	11607.8	16.917		
789.00	789.00	Zero Out:	Stream #5	756.8	0.0			
789.00	789.00	Zero Out:	Stream #4	3176.9	0.0			
789.00	789.00	Zero Out:	Stream #3	91.3	0.0			
789.00	789.00	Zero Out:	Stream #2	2306.6	0.0			
789.00	676.00	Convex Routing:	Stream #1	11607.8	11514.0	17.167		
672.00	676.00	Subarea (UH) Added to	Stream #2	0.0	297.8	16.333		
676.00	676.00	Stream #2 Added to:	Stream #1	11514.0	11564.7	17.167		
676.00	676.00	Zero Out:	Stream #2	297.8	0.0			
676.00	678.00	Pipe Flow Routing:	Stream #1	11564.7	3060.1	15.833		
678.00	696.00	Convex Routing:	Stream #1	3060.1	3060.1	17.667		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [MIDDLE.DAT] Page: 3 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
696.00	696.00	Read/Add Hydrograph:	Stream #2	0.0	9002.0	16.917		
696.00	696.00	Stream #2 Added to:	Stream #1	3060.1	12062.0	16.917		
696.00	696.00	Zero Out:	Stream #2	9002.0	0.0			
696.00	698.00	Pipe Flow Routing:	Stream #1	12062.0	572.9	2.917		
698.00	778.00	Convex Routing:	Stream #1	572.9	572.9	3.833		
682.00	688.00	Subarea (UH) Added to	Stream #2	0.0	1290.9	16.417		
688.00	778.00	Convex Routing:	Stream #2	1290.9	1188.1	16.750		
688.00	778.00	Subarea (UH) Added to	Stream #3	0.0	570.8	16.250		
778.00	778.00	Stream #3 Added to:	Stream #1	572.9	1143.8	16.250		
778.00	778.00	Stream #2 Added to:	Stream #1	1143.8	1907.7	16.667		
778.00	778.00	Zero Out:	Stream #3	570.8	0.0			
778.00	778.00	Zero Out:	Stream #2	1188.1	0.0			
778.00	738.00	Convex Routing:	Stream #1	1907.7	1813.5	17.167		
778.00	738.00	Subarea (UH) Added to	Stream #2	0.0	355.4	16.417		
738.00	738.00	Stream #2 Added to:	Stream #1	1813.5	1895.8	17.167		
738.00	738.00	Zero Out:	Stream #2	355.4	0.0			
738.00	738.00	View:	Stream #1		1895.8	17.167	8126.76	3

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

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****************************************************************************

               F L O O D   R O U T I N G   A N A L Y S I S
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                          Analysis prepared by:

                                 Stantec



----------------------------------------------------------------------------
  FILE NAME: SOLARPHX.DAT
  TIME/DATE OF STUDY: 15:02 11/06/2008

                         ** INPUT SUMMARY **

****************************************************************************
  FLOW PROCESS FROM NODE    592.00 TO NODE    594.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERCOURSE LENGTH =    6016.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3668.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     200.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     207.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.991; 30-MINUTE = 0.991;  1-HOUR = 0.991
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000

****************************************************************************
  FLOW PROCESS FROM NODE    594.00 TO NODE    596.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     187.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    1956.20; DOWNSTREAM ELEVATION(FT) =    1954.21
  PIPE DIAMETER(FT) =   7.50
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    596.00 TO NODE    668.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  400.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1954.21; DOWNSTREAM ELEVATION(FT) =    1913.00
  CHANNEL LENGTH(FT) =    4748.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    602.00 TO NODE    604.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    8380.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3358.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     215.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     496.900 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
```

```
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.978; 30-MINUTE = 0.978;  1-HOUR = 0.978
    3-HOUR = 0.997;    6-HOUR = 0.998; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE    604.00 TO NODE    606.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     181.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    1932.98; DOWNSTREAM ELEVATION(FT) =    1929.00
  PIPE DIAMETER(FT) =  10.90
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    606.00 TO NODE    668.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  250.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1929.00; DOWNSTREAM ELEVATION(FT) =    1913.00
  CHANNEL LENGTH(FT) =    2622.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    662.00 TO NODE    668.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    7964.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3311.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     137.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     361.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999

****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
```

```
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    758.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  600.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1913.00; DOWNSTREAM ELEVATION(FT) =    1893.00
  CHANNEL LENGTH(FT) =    2052.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    612.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    5129.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2520.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     155.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     202.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.991; 30-MINUTE = 0.991;  1-HOUR = 0.991
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    616.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     190.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    1919.24; DOWNSTREAM ELEVATION(FT) =    1916.36
  PIPE DIAMETER(FT) =   5.50
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    758.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  120.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1916.36; DOWNSTREAM ELEVATION(FT) =    1893.00
  CHANNEL LENGTH(FT) =    2909.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    632.00 TO NODE    634.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERCOURSE LENGTH =    2094.000 FEET
```

```
  LENGTH FROM CONCENTRATION POINT TO CENTROID =     935.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      77.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =      46.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    634.00 TO NODE    636.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     282.00     MANNINGS FACTOR = 0.024
  UPSTREAM ELEVATION(FT) =    1915.36; DOWNSTREAM ELEVATION(FT) =    1910.41
  PIPE DIAMETER(FT) =   5.50
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    636.00 TO NODE    758.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #3 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 3 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =   40.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1910.41; DOWNSTREAM ELEVATION(FT) =    1893.00
  CHANNEL LENGTH(FT) =    2400.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    758.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERCOURSE LENGTH =    2909.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    1384.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      32.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     114.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 3<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    768.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  450.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1893.00; DOWNSTREAM ELEVATION(FT) =    1860.00
  CHANNEL LENGTH(FT) =    4621.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    768.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    4261.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    3341.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      33.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     205.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.991; 30-MINUTE = 0.991;  1-HOUR = 0.991
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    768.00 TO NODE    768.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    768.00 TO NODE    768.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    768.00 TO NODE    768.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    768.00 TO NODE    728.00 IS CODE = 5.2
----------------------------------------------------------------------------
```

```
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) = 1000.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1860.00; DOWNSTREAM ELEVATION(FT) =    1825.00
  CHANNEL LENGTH(FT) =    2686.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    622.00 TO NODE    624.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
==============================================================================
  WATERCOURSE LENGTH =    5831.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2833.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     165.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     103.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.340; LOW LOSS FRACTION = 0.460
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


******************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    626.00 IS CODE =   4
------------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
==============================================================================
  MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
  STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
  VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
  EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
  OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET.
         UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
         (0.938)(DIAMETER):

  PIPELENGTH(FT) =     244.00     MANNINGS FACTOR = 0.015
  UPSTREAM ELEVATION(FT) =    1899.18; DOWNSTREAM ELEVATION(FT) =    1893.60
  PIPE DIAMETER(FT) =   6.20
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    626.00 TO NODE    728.00 IS CODE = 5.2
------------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #2 BY THE CONVEX METHOD<<<<<
==============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 2 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  300.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1893.60; DOWNSTREAM ELEVATION(FT) =    1825.00
  CHANNEL LENGTH(FT) =    6384.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
==============================================================================


******************************************************************************
  FLOW PROCESS FROM NODE    652.00 TO NODE    654.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
==============================================================================
  WATERCOURSE LENGTH =   36362.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   22020.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     265.000 FEET
  BASIN FACTOR = 0.046
  WATERSHED AREA =    3283.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.450
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.853; 30-MINUTE = 0.853;  1-HOUR = 0.853
    3-HOUR = 0.978;    6-HOUR = 0.989; 24-HOUR = 0.993
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    654.00 TO NODE    728.00 IS CODE = 5.2
----------------------------------------------------------------------------
  >>>>>MODEL CHANNEL ROUTING OF STREAM #4 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 4 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  750.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1860.00; DOWNSTREAM ELEVATION(FT) =    1825.00
  CHANNEL LENGTH(FT) =    2589.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    626.00 TO NODE    728.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERCOURSE LENGTH =    6384.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2141.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      80.000 FEET
  BASIN FACTOR = 0.044
  WATERSHED AREA =     853.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.450
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.962; 30-MINUTE = 0.962;  1-HOUR = 0.962
    3-HOUR = 0.994;    6-HOUR = 0.997; 24-HOUR = 0.998


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 4<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 2<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    748.00 IS CODE = 5.2
----------------------------------------------------------------------------
```

```
  >>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
============================================================================
  THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER TO
  ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 1-MINUTE INTERVALS
  (Reference: the National Engineering Handbook, Hydrology,
  Chapter 17, page 17-52, August,1972, U.S. Department of Commerce).

  ASSUMED REGULAR CHANNEL INFORMATION:
  BASEWIDTH(FT) =  600.00     CHANNEL Z = 10.00
  UPSTREAM ELEVATION(FT) =    1825.00; DOWNSTREAM ELEVATION(FT) =    1803.00
  CHANNEL LENGTH(FT) =    4153.00      MANNING'S FACTOR = 0.035
  CONSTANT LOSS RATE(CFS) =    0.00
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    748.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERCOURSE LENGTH =    4153.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =    2854.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =      22.000 FEET
  BASIN FACTOR = 0.040
  WATERSHED AREA =     288.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.320; LOW LOSS FRACTION = 0.440
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.57; 30-MINUTE =  1.45;  1-HOUR =  1.80
    3-HOUR =  2.33;    6-HOUR =  2.89; 24-HOUR =  3.80
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.987; 30-MINUTE = 0.987;  1-HOUR = 0.987
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    748.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    748.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    748.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [SOLARPHX.DAT] Page: 1 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
592.00	594.00	Subarea (UH) Added to	Stream #1	0.0	474.7	16.267		
594.00	596.00	Pipe Flow Routing:	Stream #1	474.7	429.1	16.200		
596.00	668.00	Convex Routing:	Stream #1	429.1	428.1	16.733		
602.00	604.00	Subarea (UH) Added to	Stream #2	0.0	1023.8	16.283		
604.00	606.00	Pipe Flow Routing:	Stream #2	1023.8	1023.2	16.283		
606.00	668.00	Convex Routing:	Stream #2	1023.2	1009.4	16.467		
662.00	668.00	Subarea (UH) Added to	Stream #3	0.0	724.5	16.300		
668.00	668.00	Stream #3 Added to:	Stream #2	1009.4	1598.5	16.400		
668.00	668.00	Stream #2 Added to:	Stream #1	428.1	1846.5	16.433		
668.00	668.00	View:	Stream #1		1846.5	16.433	225.43	3
668.00	668.00	Zero Out:	Stream #3	724.5	0.0			
668.00	668.00	Zero Out:	Stream #2	1598.5	0.0			
668.00	758.00	Convex Routing:	Stream #1	1846.5	1832.9	16.583		
612.00	614.00	Subarea (UH) Added to	Stream #2	0.0	518.2	16.217		
614.00	616.00	Pipe Flow Routing:	Stream #2	518.2	224.0	16.000		
616.00	758.00	Convex Routing:	Stream #2	224.0	224.0	16.800		
632.00	634.00	Subarea (UH) Added to	Stream #3	0.0	177.2	16.100		
634.00	636.00	Pipe Flow Routing:	Stream #3	177.2	175.7	16.100		
636.00	758.00	Convex Routing:	Stream #3	175.7	162.4	16.267		
616.00	758.00	Subarea (UH) Added to	Stream #4	0.0	340.8	16.167		
758.00	758.00	Stream #4 Added to:	Stream #3	162.4	447.5	16.200		
758.00	758.00	Stream #3 Added to:	Stream #2	224.0	656.5	16.217		
758.00	758.00	Stream #2 Added to:	Stream #1	1832.9	2174.3	16.567		
758.00	758.00	View:	Stream #1		2174.3	16.567	302.29	3

758.00	758.00	Zero Out:	Stream #4	340.8	0.0			
758.00	758.00	Zero Out:	Stream #3	447.5	0.0			
758.00	758.00	Zero Out:	Stream #2	656.5	0.0			
758.00	768.00	Convex Routing:	Stream #1	2174.3	2159.7	16.833		
758.00	768.00	Subarea (UH) Added to	Stream #2	0.0	437.6	16.267		
768.00	768.00	Stream #2 Added to:	Stream #1	2159.7	2268.5	16.833		
768.00	768.00	View:	Stream #1		2268.5	16.833	345.78	3
768.00	768.00	Zero Out:	Stream #2	437.6	0.0			
768.00	728.00	Convex Routing:	Stream #1	2268.5	2255.8	17.000		
622.00	624.00	Subarea (UH) Added to	Stream #2	0.0	250.2	16.250		
624.00	626.00	Pipe Flow Routing:	Stream #2	250.2	250.0	16.250		
626.00	728.00	Convex Routing:	Stream #2	250.0	238.2	16.750		
652.00	654.00	Subarea (UH) Added to	Stream #4	0.0	1860.0	17.617		
654.00	728.00	Convex Routing:	Stream #4	1860.0	1846.4	17.767		
626.00	728.00	Subarea (UH) Added to	Stream #5	0.0	1785.9	16.267		
728.00	728.00	Stream #5 Added to:	Stream #4	1846.4	2559.5	16.300		

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [SOLARPHX.DAT] Page: 2 of

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS		UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
728.00	728.00	Stream #4 Added to:	Stream #2	238.2	2600.6	16.300		
728.00	728.00	Stream #2 Added to:	Stream #1	2255.8	4099.0	17.050		
728.00	728.00	View:	Stream #1		4099.0	17.050	1211.69	3
728.00	728.00	Zero Out:	Stream #5	1785.9	0.0			
728.00	728.00	Zero Out:	Stream #4	2559.5	0.0			
728.00	728.00	Zero Out:	Stream #2	2600.6	0.0			
728.00	748.00	Convex Routing:	Stream #1	4099.0	4092.6	17.283		
728.00	748.00	Subarea (UH) Added to	Stream #2	0.0	616.1	16.267		
748.00	748.00	Stream #2 Added to:	Stream #1	4092.6	4181.3	17.283		
748.00	748.00	Zero Out:	Stream #2	616.1	0.0			
748.00	748.00	View:	Stream #1		4181.3	17.283	1274.11	3

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

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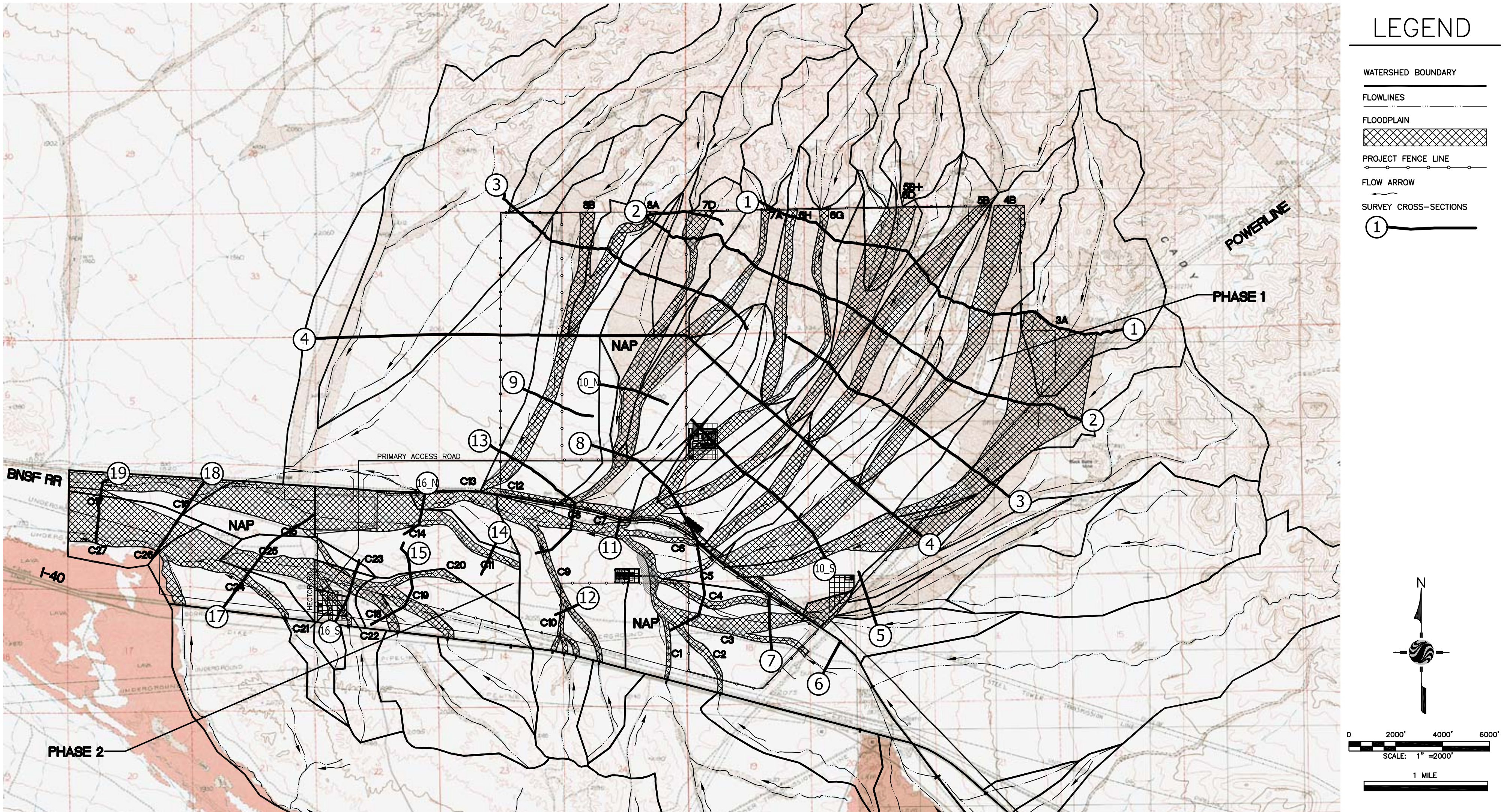
Appendix B

Hydraulic Analysis

Floodplain Map with Cross Sections



NO.	DATE	REVISION	BY	APP.

Stirling Energy Systems

8211 South 48th Street
Phoenix, AZ 85044
(602) 438-2200

Stantec

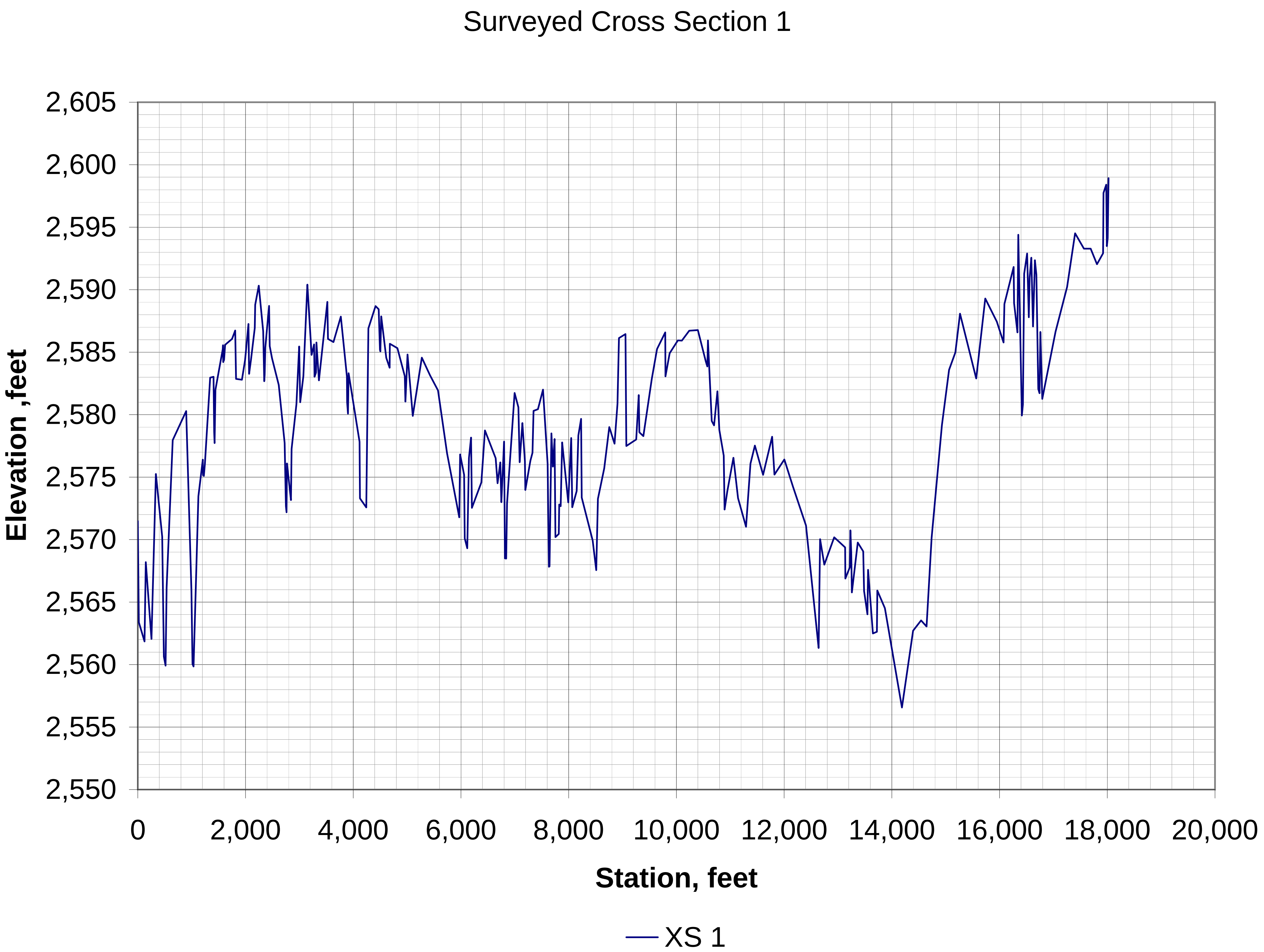
DRN. db	DES. CP/AL	CHK. CG	DATE 10/31/08
SCALE 1"=2000'		APP.	DATE

TITLE:

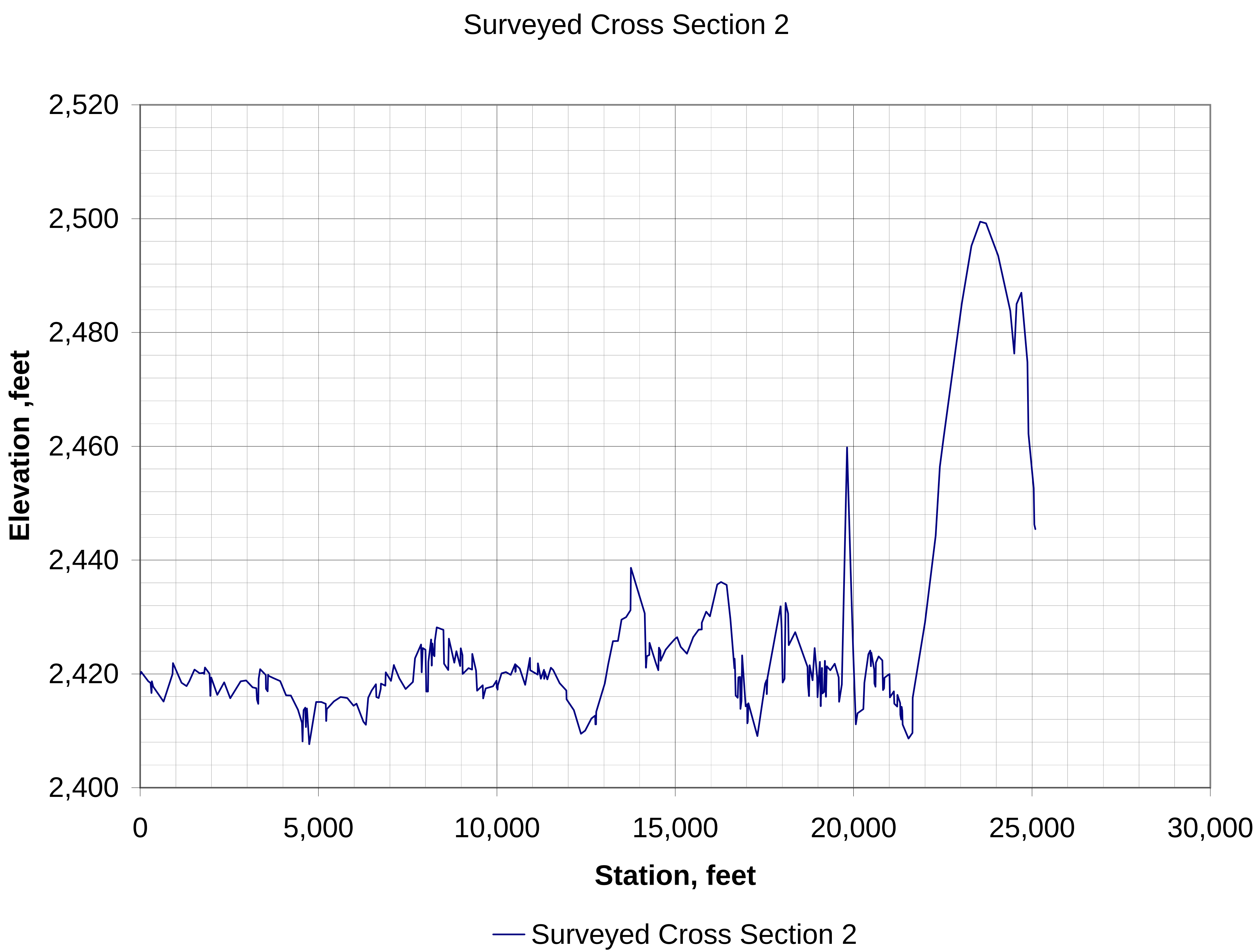
SES SOLAR ONE LLC
FLOODPLAIN MAP
APPENDIX B

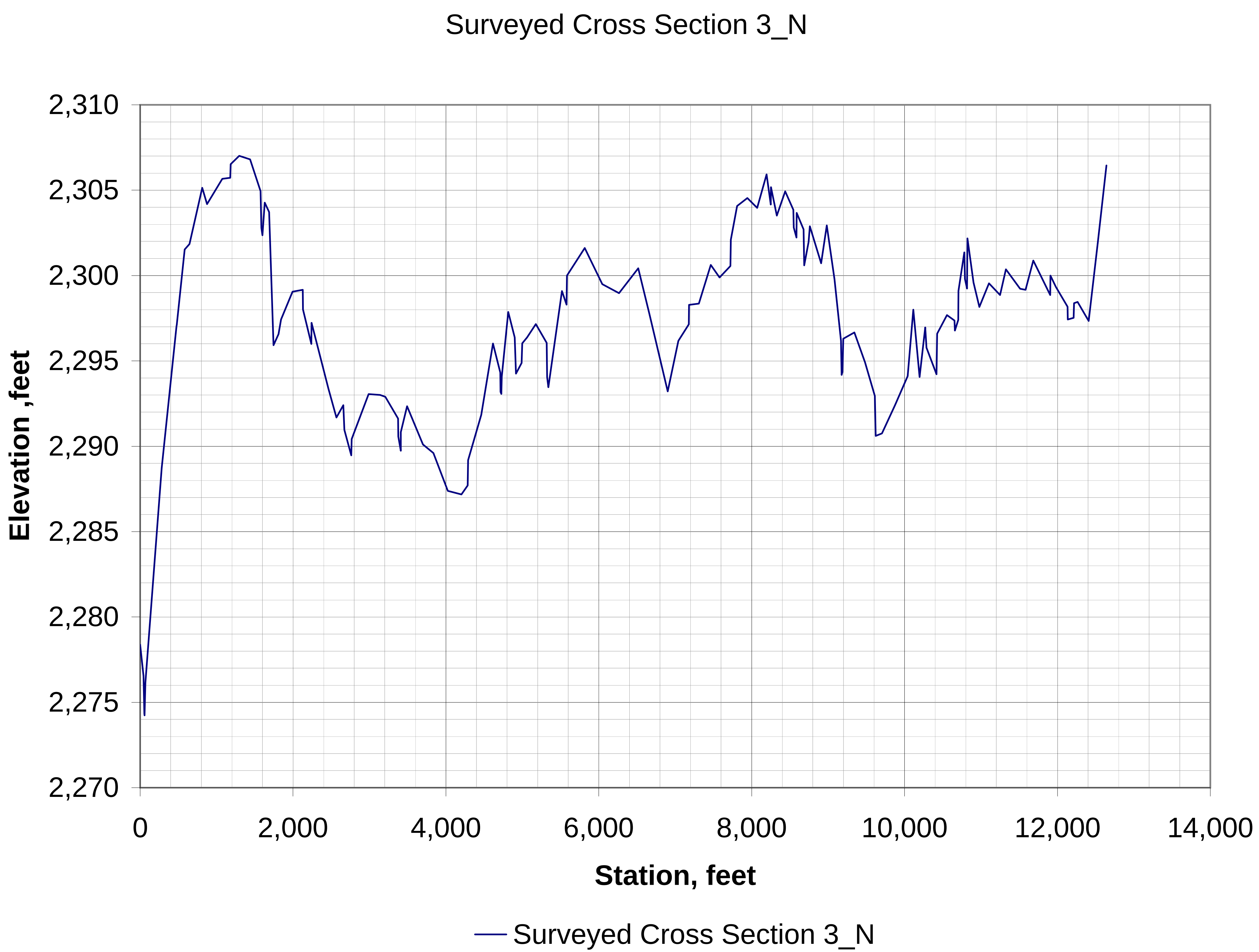
	SHT.	REV.
200002430	1	-

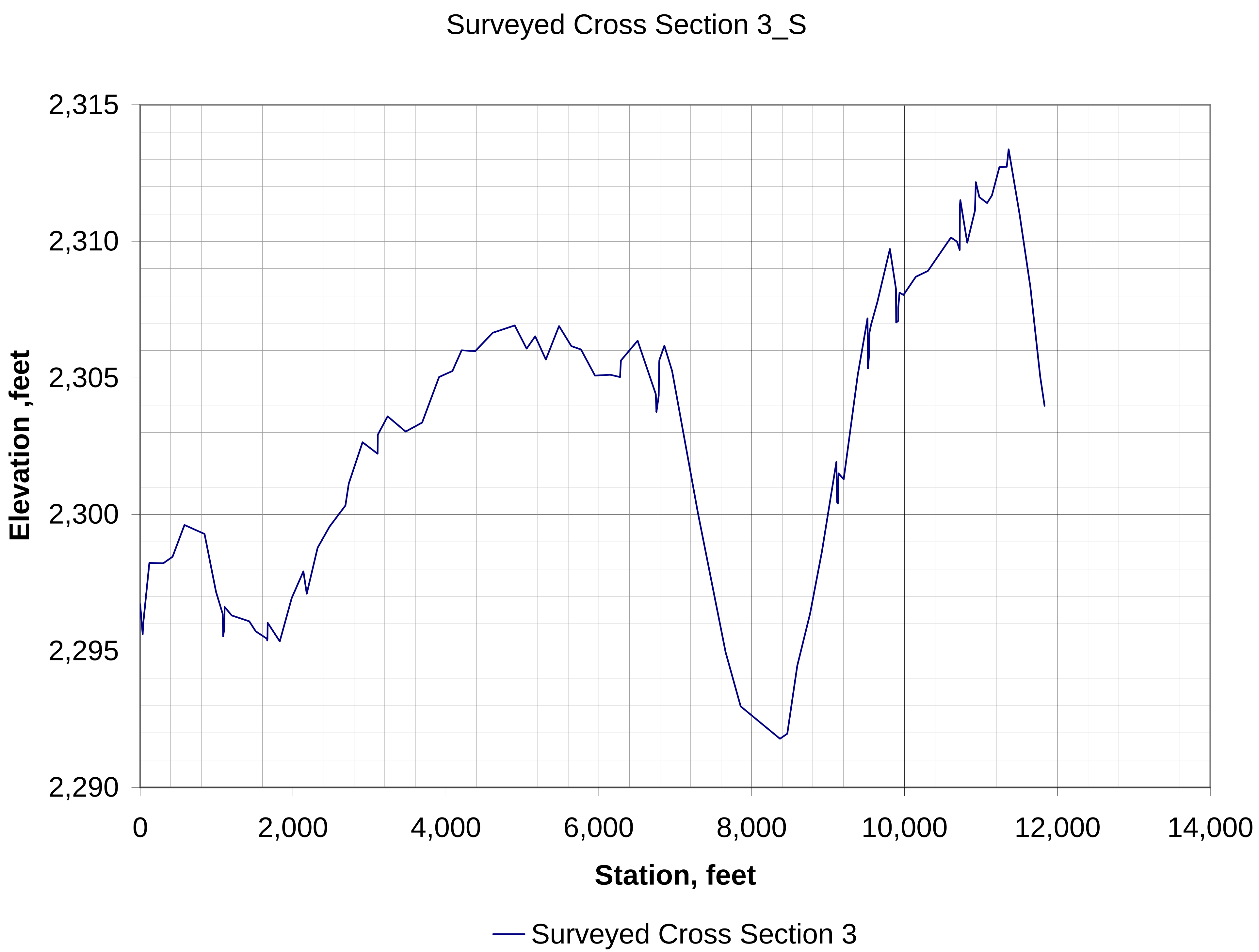
Surveyed Cross Section Plots



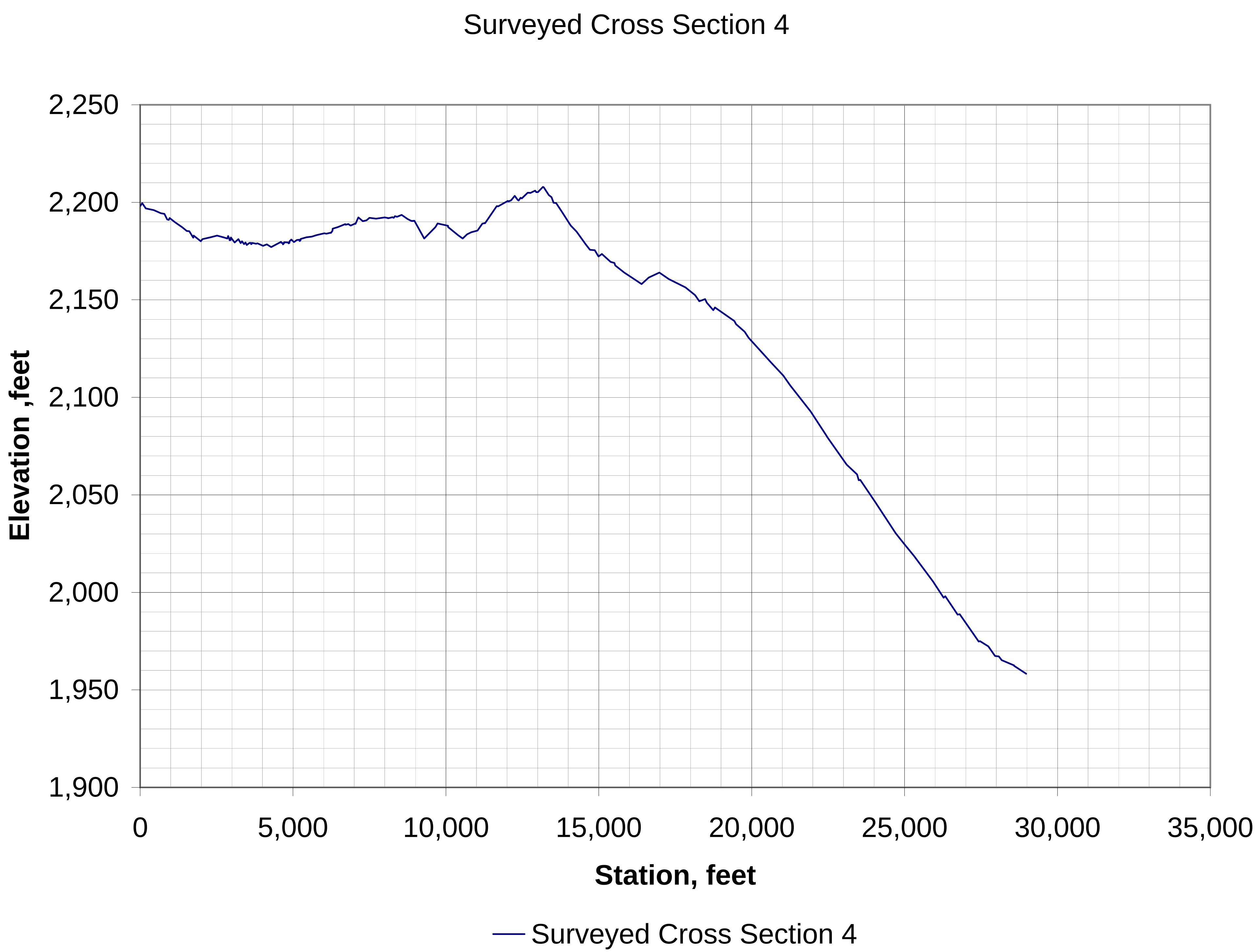
Surveyed Cross Section 1
2,605
2,600
2,595
2,590
2,585
2,580
2,575
2,570
2,565
2,560
2,555
2,550
Elevation ,feet
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,000
Station, feet
XS 1


Surveyed Cross Section 2
2,520
2,500
2,480
2,460
2,440
2,420
2,400
Elevation ,feet
0
5,000
10,000
15,000
20,000
25,000
30,000
Station, feet
Surveyed Cross Section 2

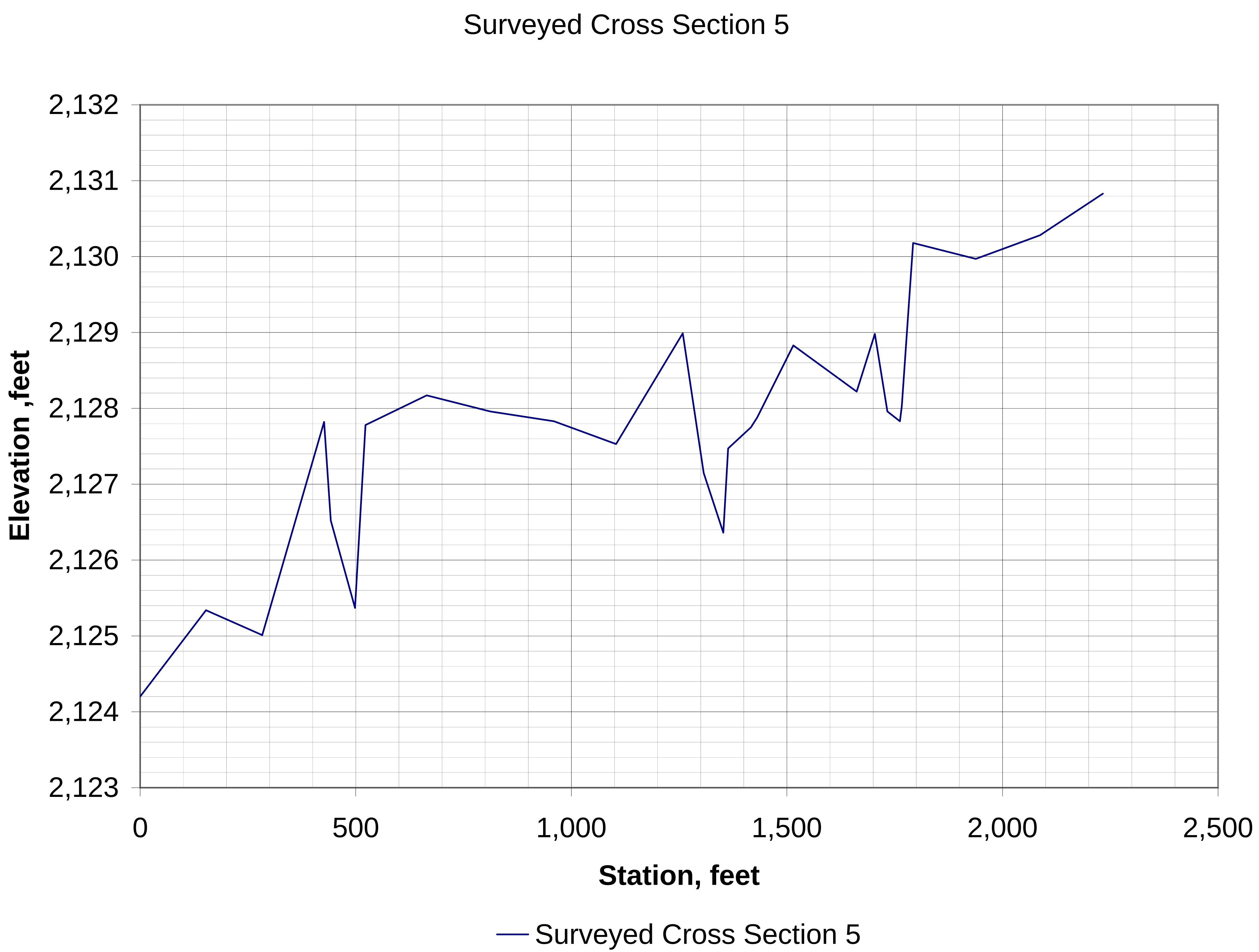

Surveyed Cross Section 3_N
2,310
2,305
2,300
2,295
2,290
2,285
2,280
2,275
2,270
Elevation ,feet
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
Station, feet
Surveyed Cross Section 3_N



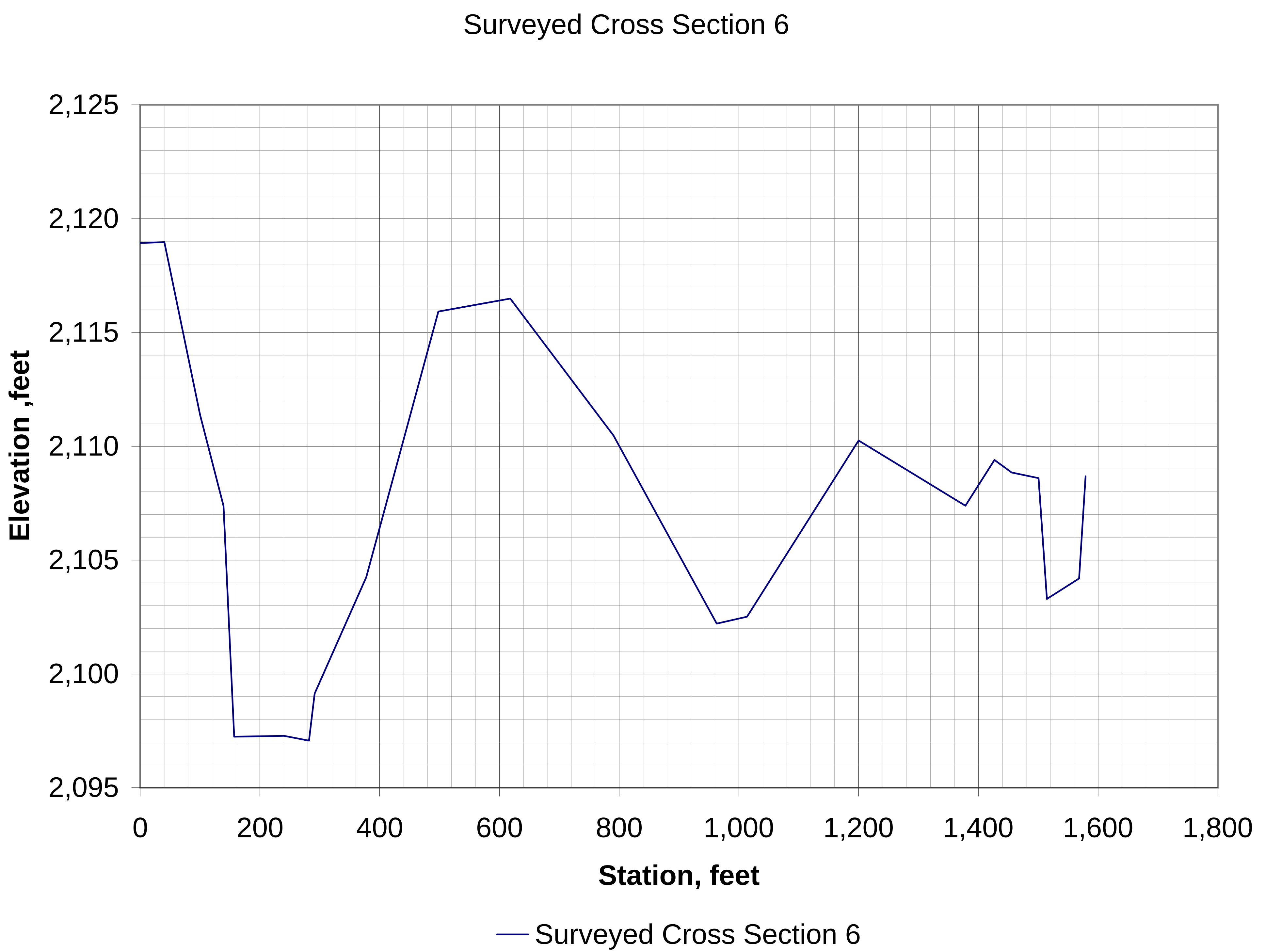
Surveyed Cross Section 3_S
2,315
2,310
2,305
2,300
2,295
2,290
Elevation ,feet
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
Station, feet
Surveyed Cross Section 3

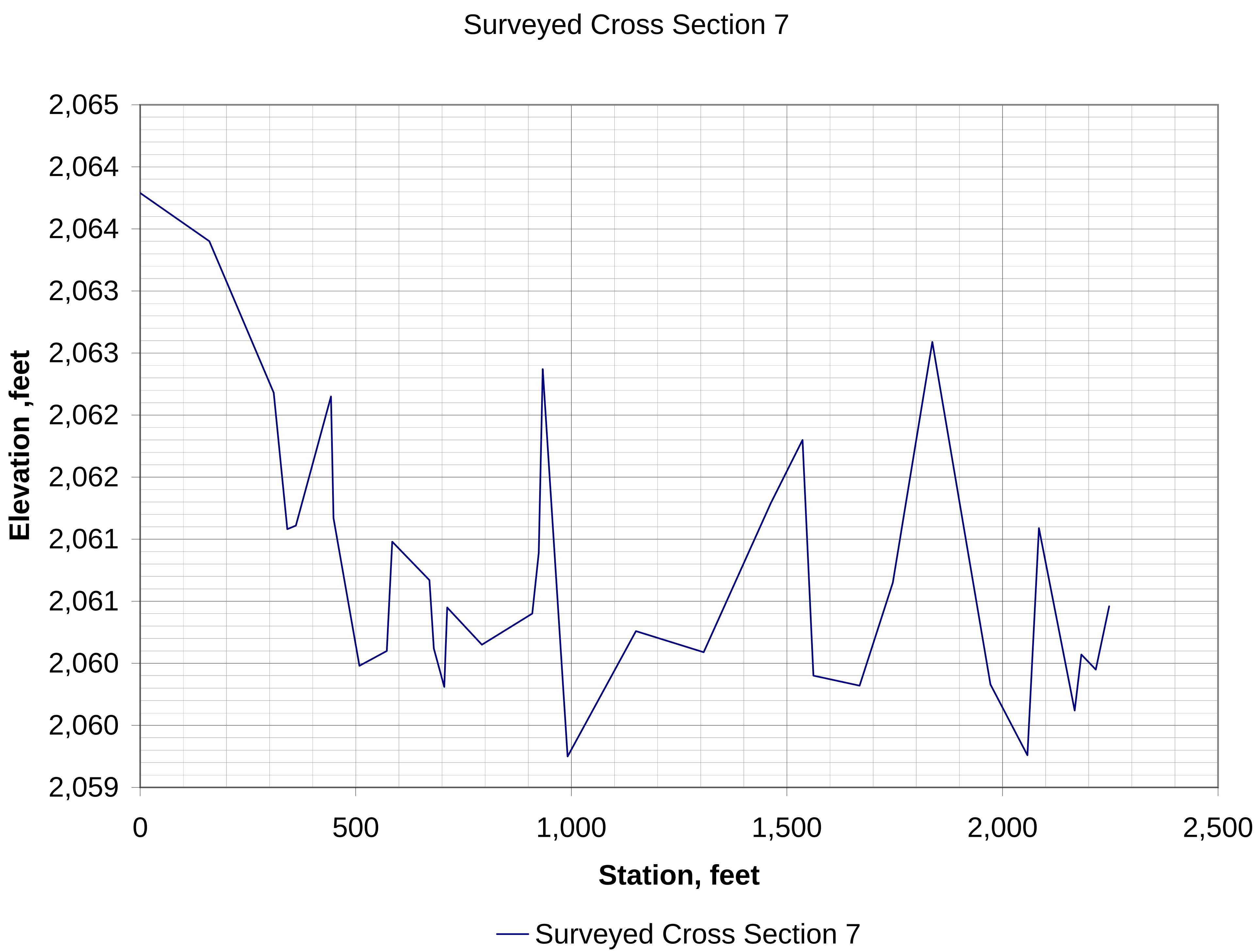


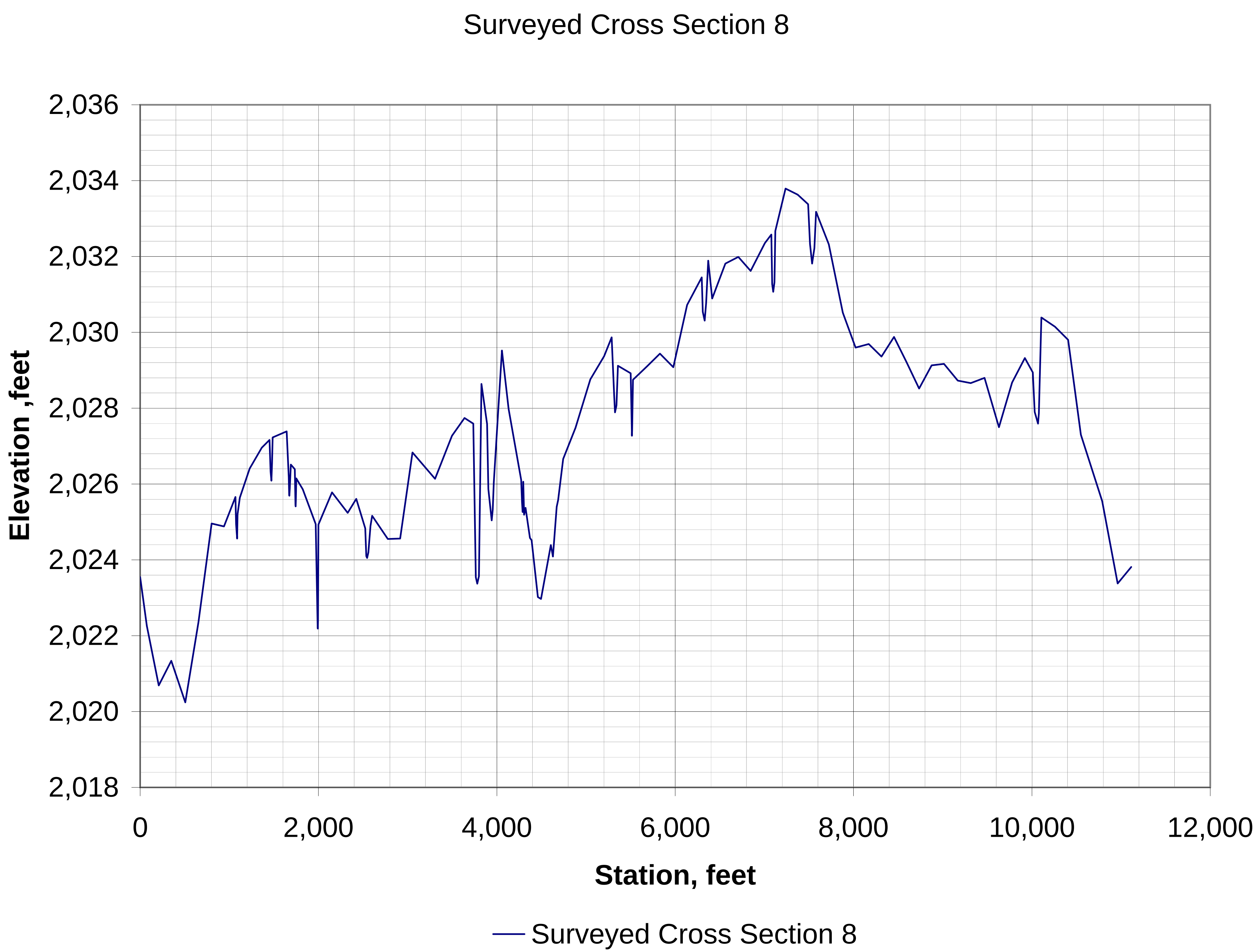
Surveyed Cross Section 4
Elevation ,feet
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
Station, feet
Surveyed Cross Section 4



Surveyed Cross Section 5
2,132
2,131
2,130
2,129
2,128
2,127
2,126
2,125
2,124
2,123
Elevation ,feet
0
500
1,000
1,500
2,000
2,500
Station, feet
Surveyed Cross Section 5

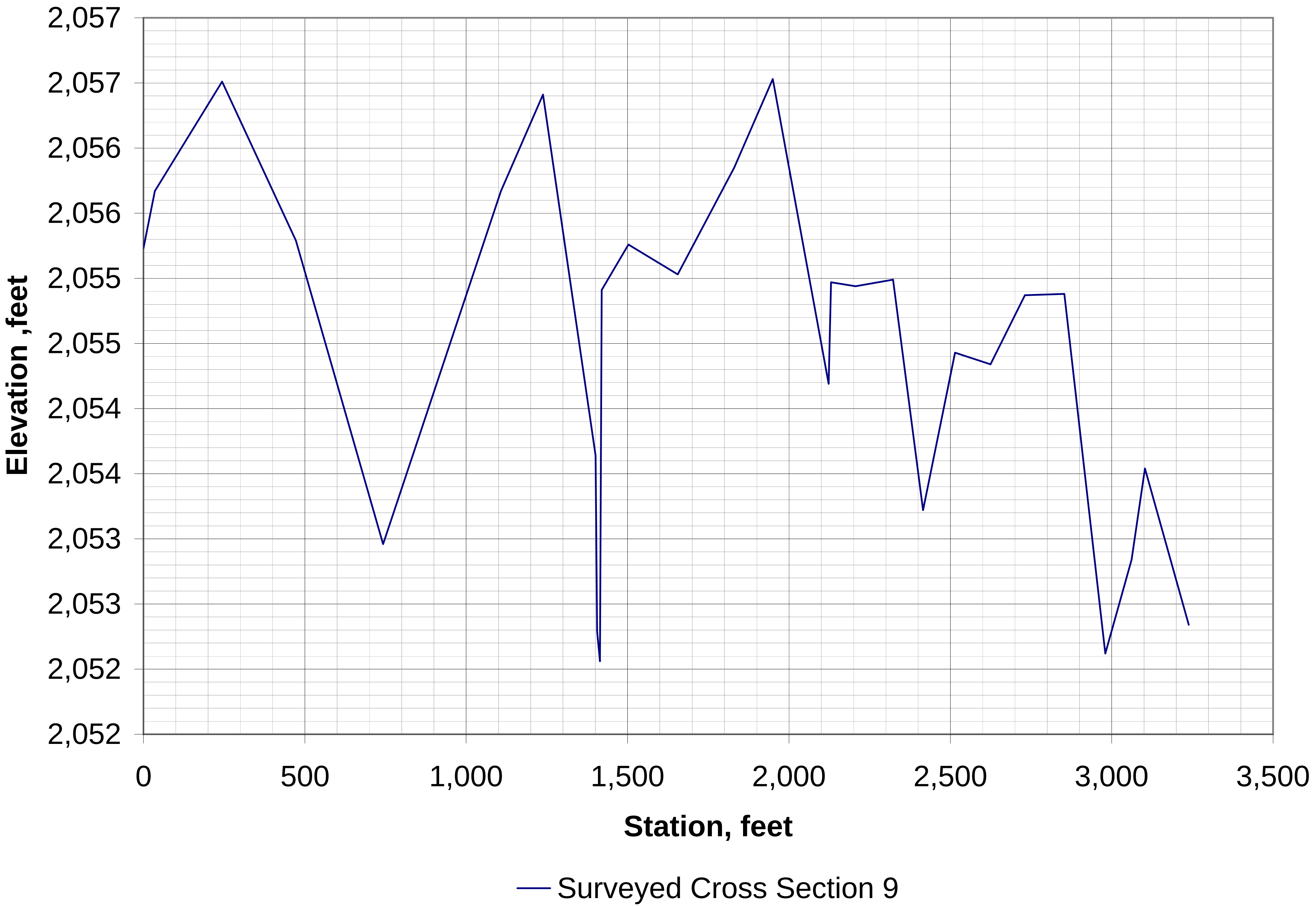

Surveyed Cross Section 6
2,125
2,120
2,115
2,110
2,105
2,100
2,095
Elevation ,feet
0
200
400
600
800
1,000
1,200
1,400
1,600
1,800
Station, feet
Surveyed Cross Section 6

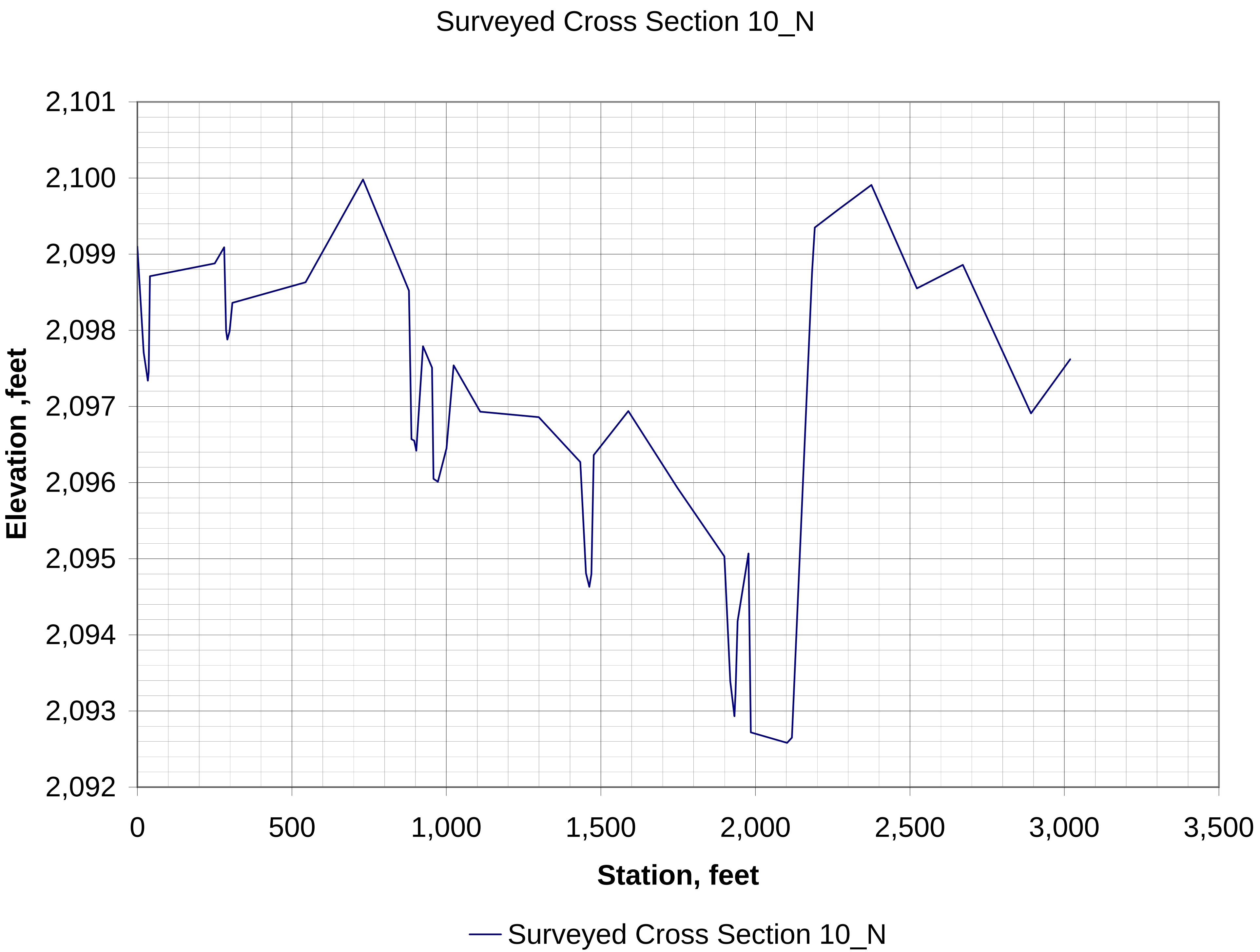

Surveyed Cross Section 7
2,065
2,064
2,064
2,063
2,063
2,062
2,062
2,061
2,061
2,060
2,060
2,059
Elevation ,feet
0
500
1,000
1,500
2,000
2,500
Station, feet
Surveyed Cross Section 7



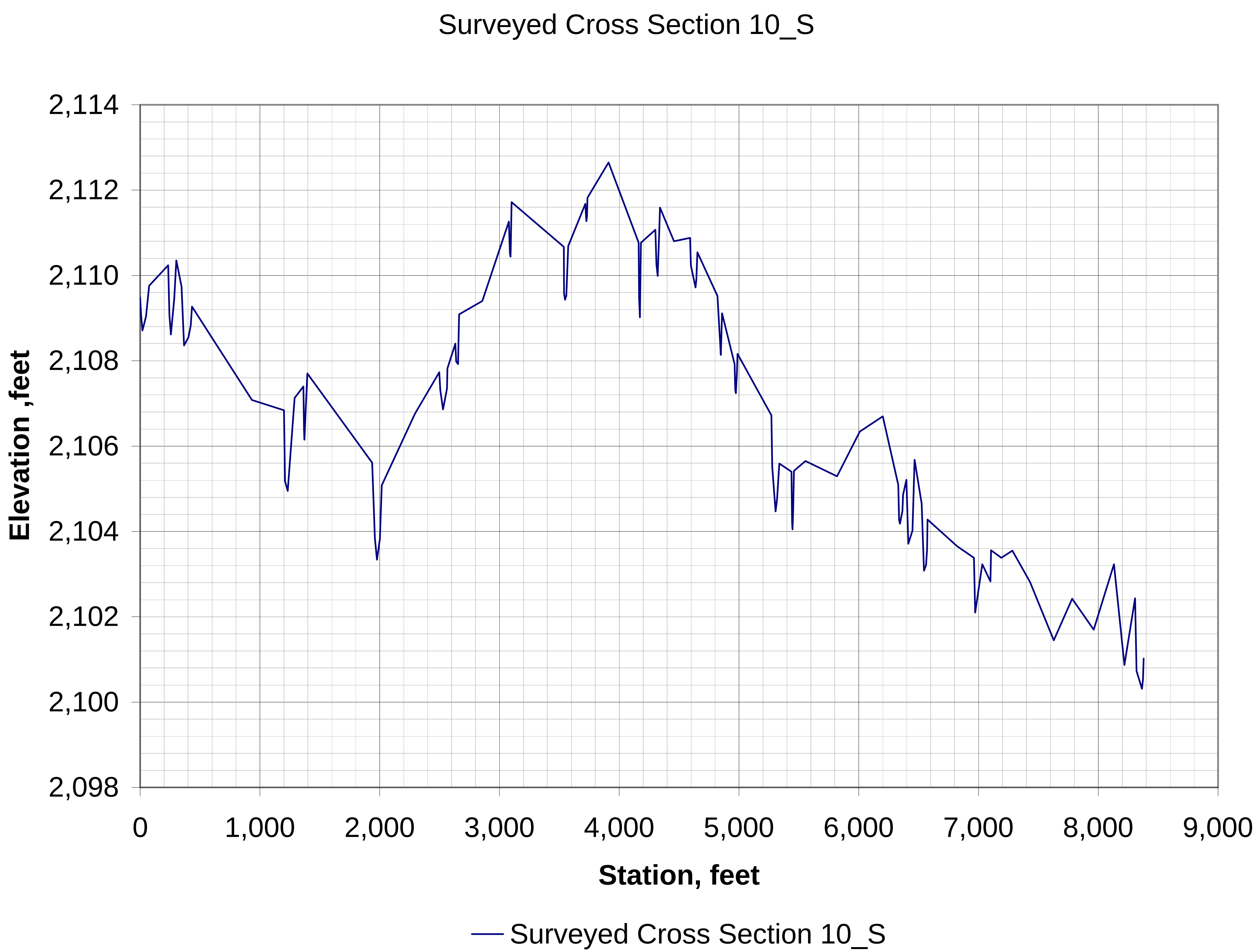
Surveyed Cross Section 8
2,036
2,034
2,032
2,030
2,028
2,026
2,024
2,022
2,020
2,018
Elevation ,feet
0
2,000
4,000
6,000
8,000
10,000
12,000
Station, feet
Surveyed Cross Section 8

Surveyed Cross Section 9

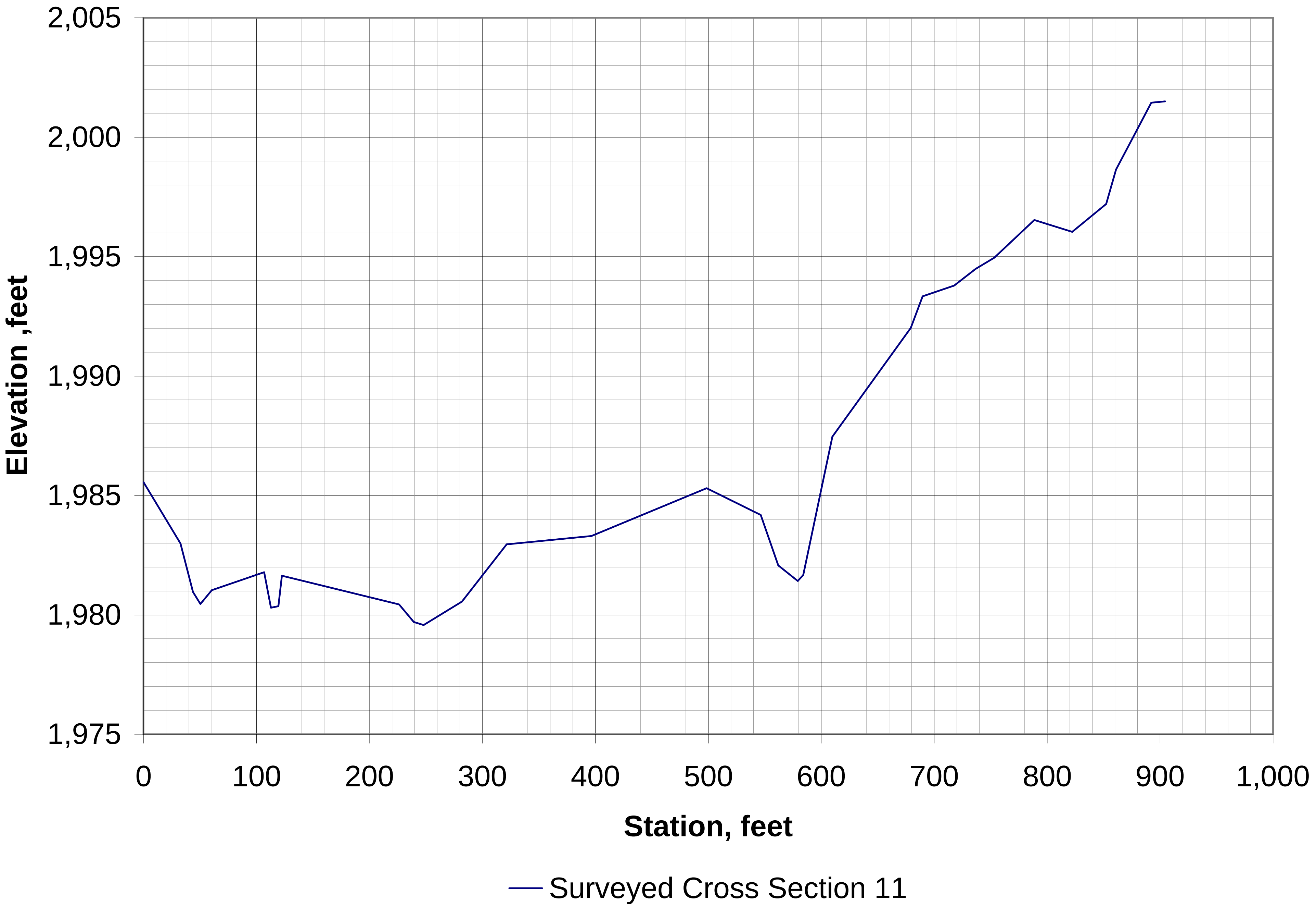


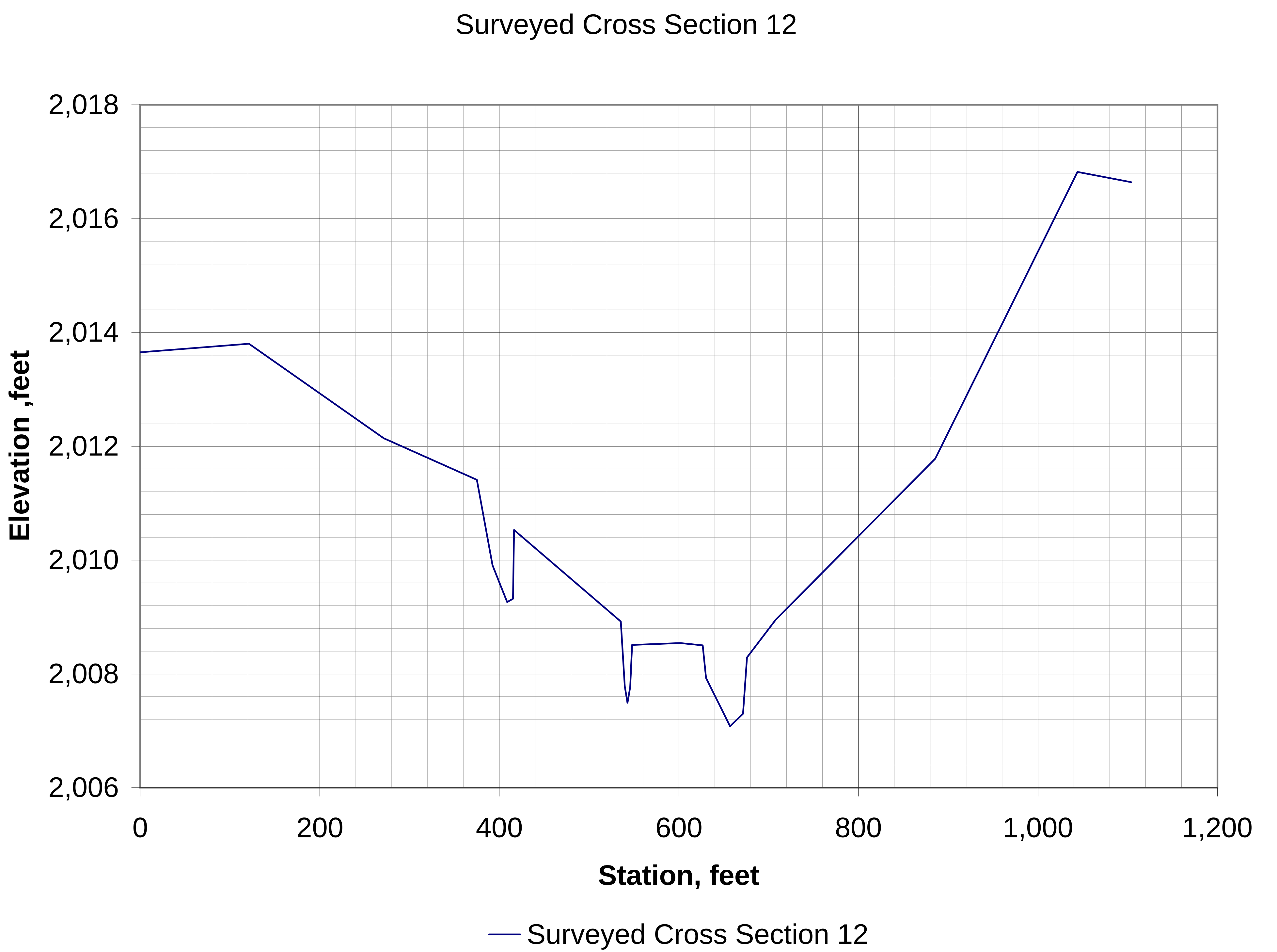


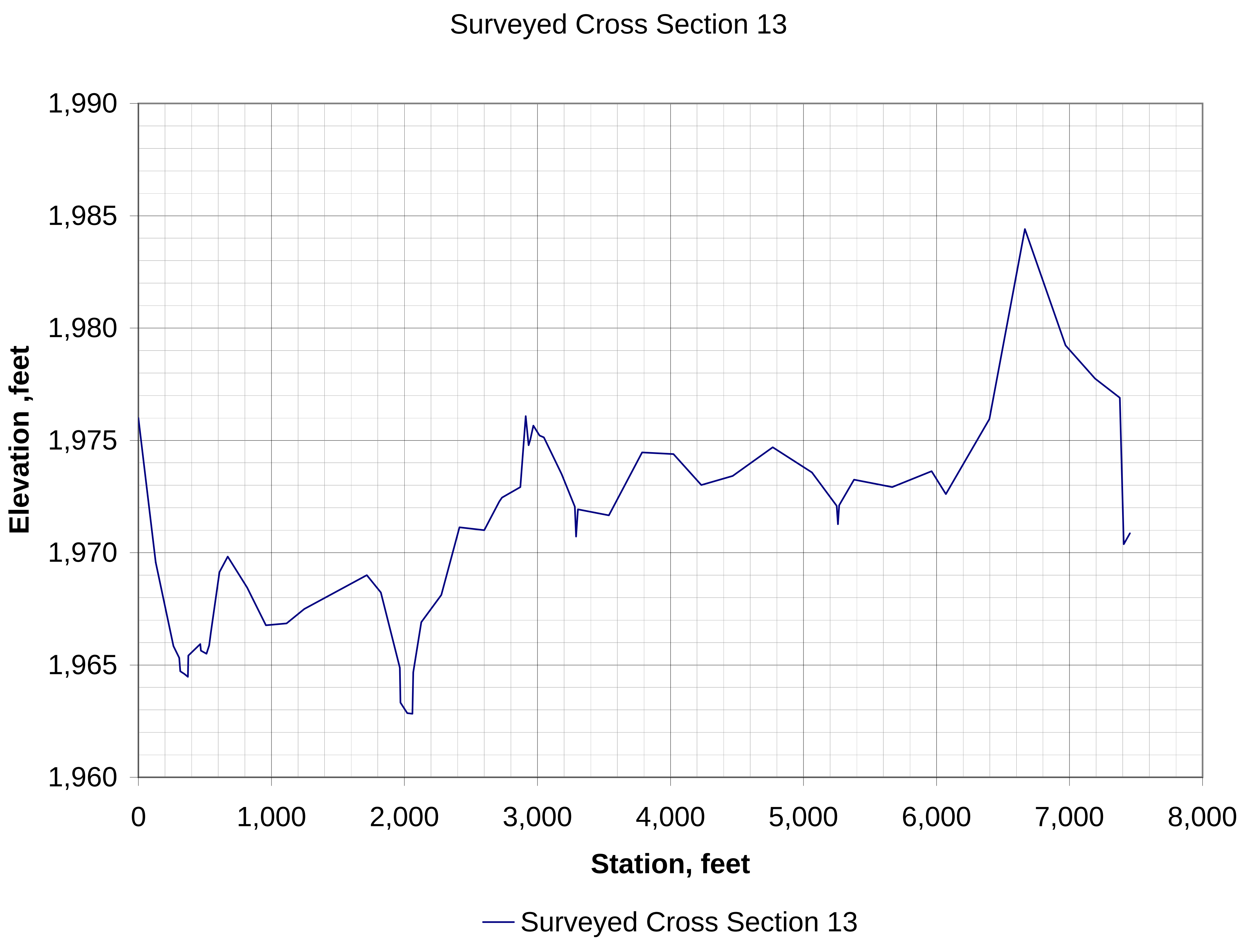
Surveyed Cross Section 10_N
Elevation ,feet
2,101
2,100
2,099
2,098
2,097
2,096
2,095
2,094
2,093
2,092
0
500
1,000
1,500
2,000
2,500
3,000
3,500
Station, feet
Surveyed Cross Section 10_N


Surveyed Cross Section 10_S
Elevation ,feet
2,114
2,112
2,110
2,108
2,106
2,104
2,102
2,100
2,098
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
Station, feet
Surveyed Cross Section 10_S

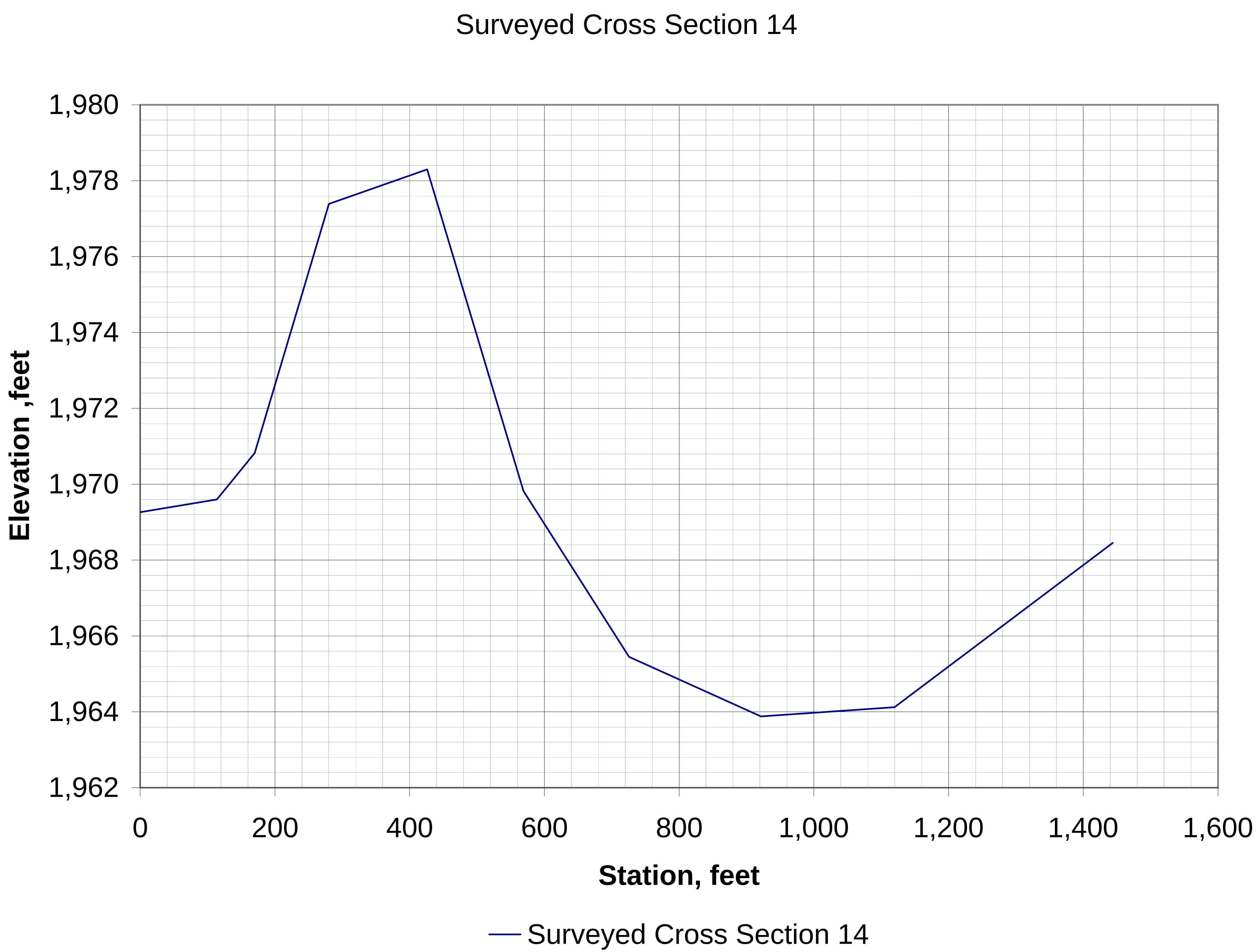
Surveyed Cross Section 11

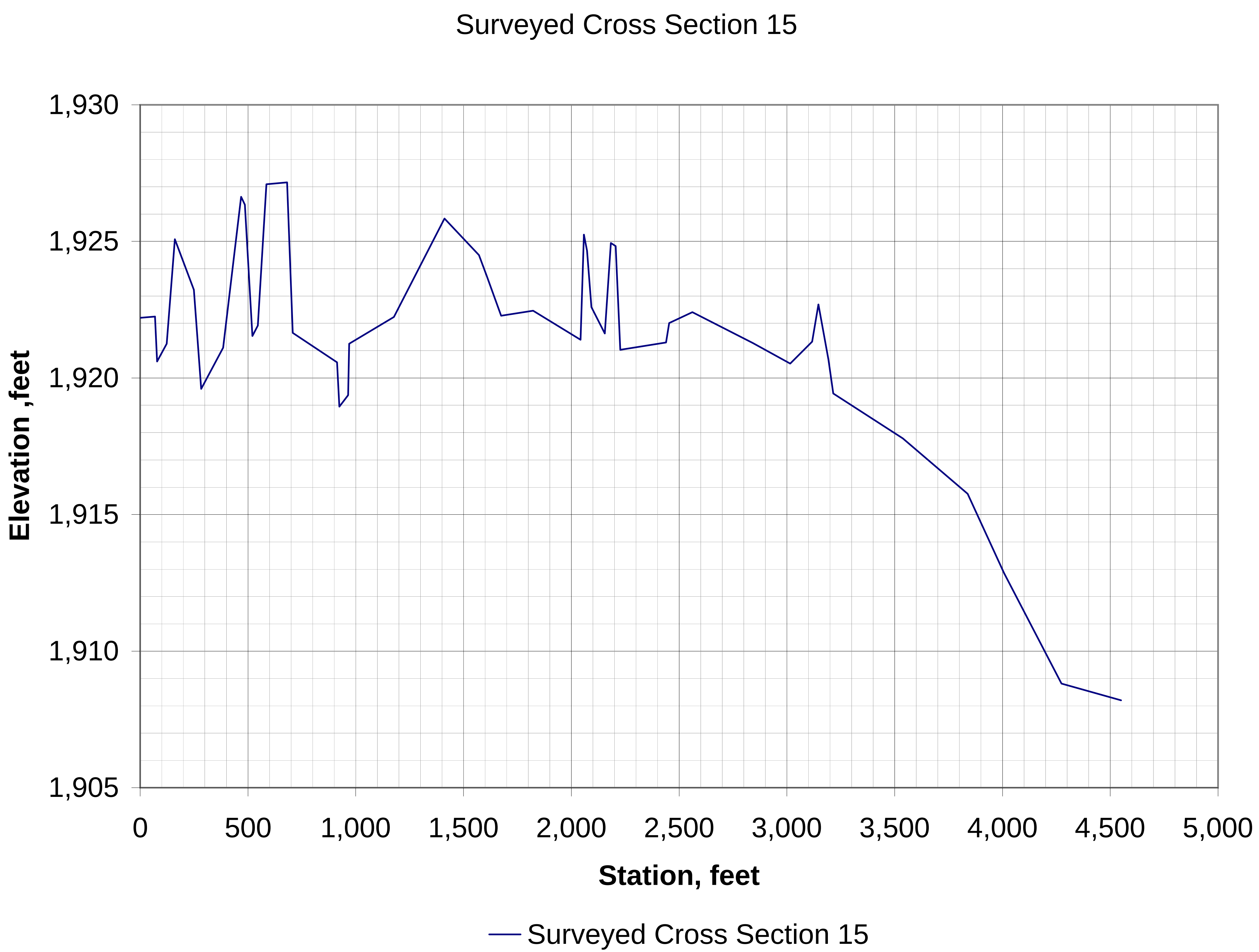



Surveyed Cross Section 12
2,018
2,016
2,014
2,012
2,010
2,008
2,006
Elevation ,feet
0
200
400
600
800
1,000
1,200
Station, feet
Surveyed Cross Section 12

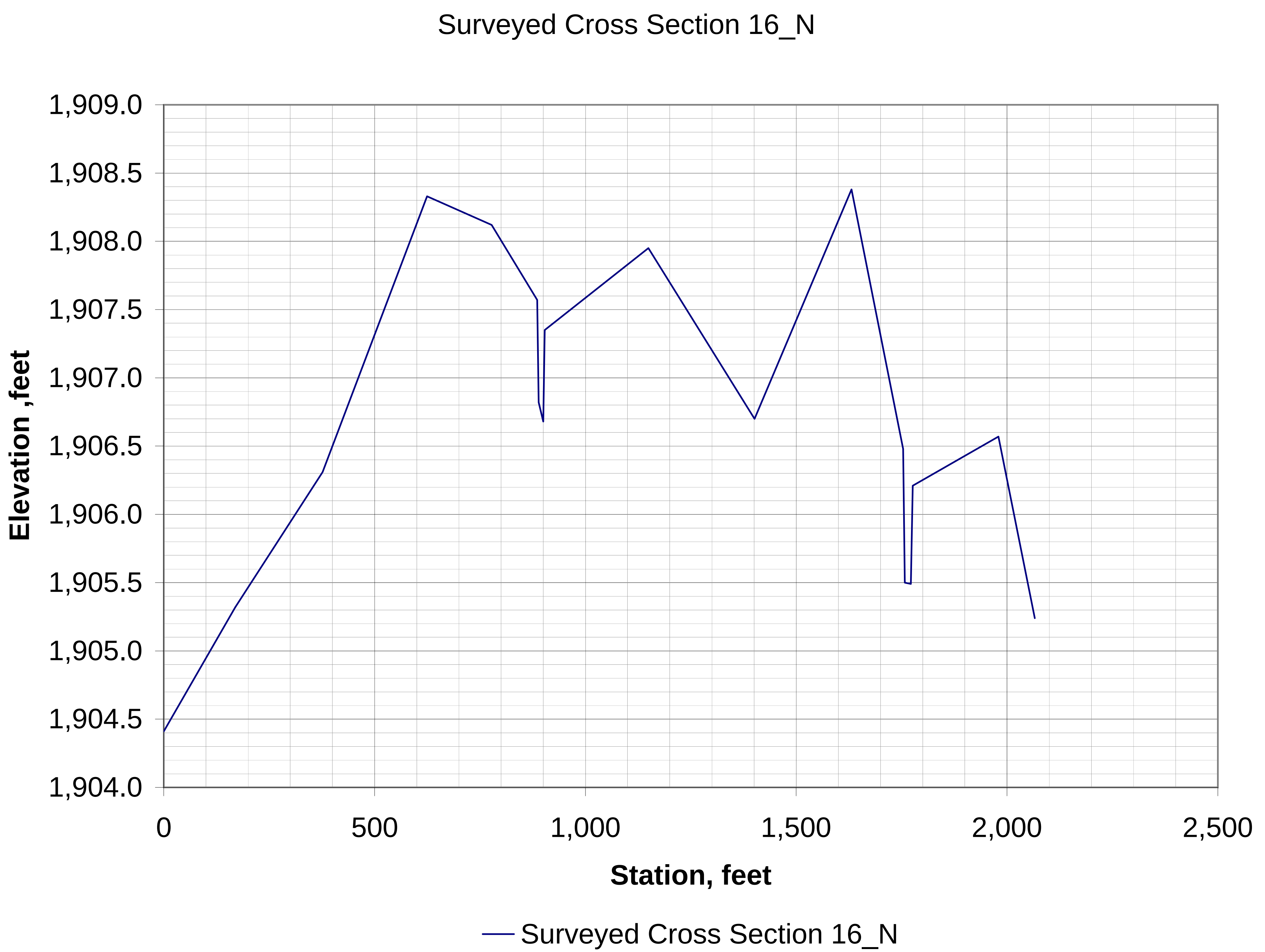


Surveyed Cross Section 13
1,990
1,985
1,980
1,975
1,970
1,965
1,960
Elevation ,feet
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
Station, feet
Surveyed Cross Section 13

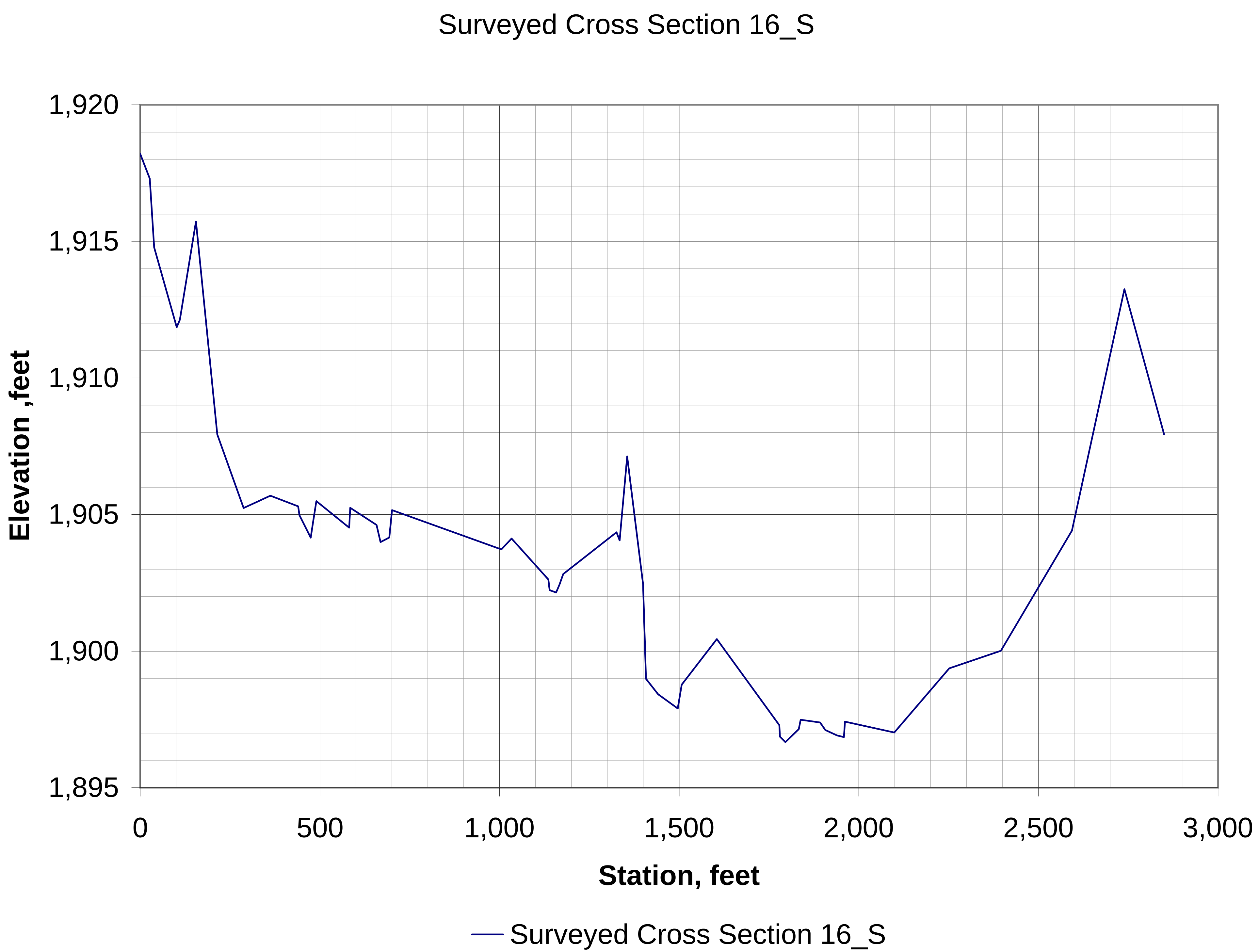

Surveyed Cross Section 14
Elevation ,feet
1,980
1,978
1,976
1,974
1,972
1,970
1,968
1,966
1,964
1,962
0
200
400
600
800
1,000
1,200
1,400
1,600
Station, feet
Surveyed Cross Section 14

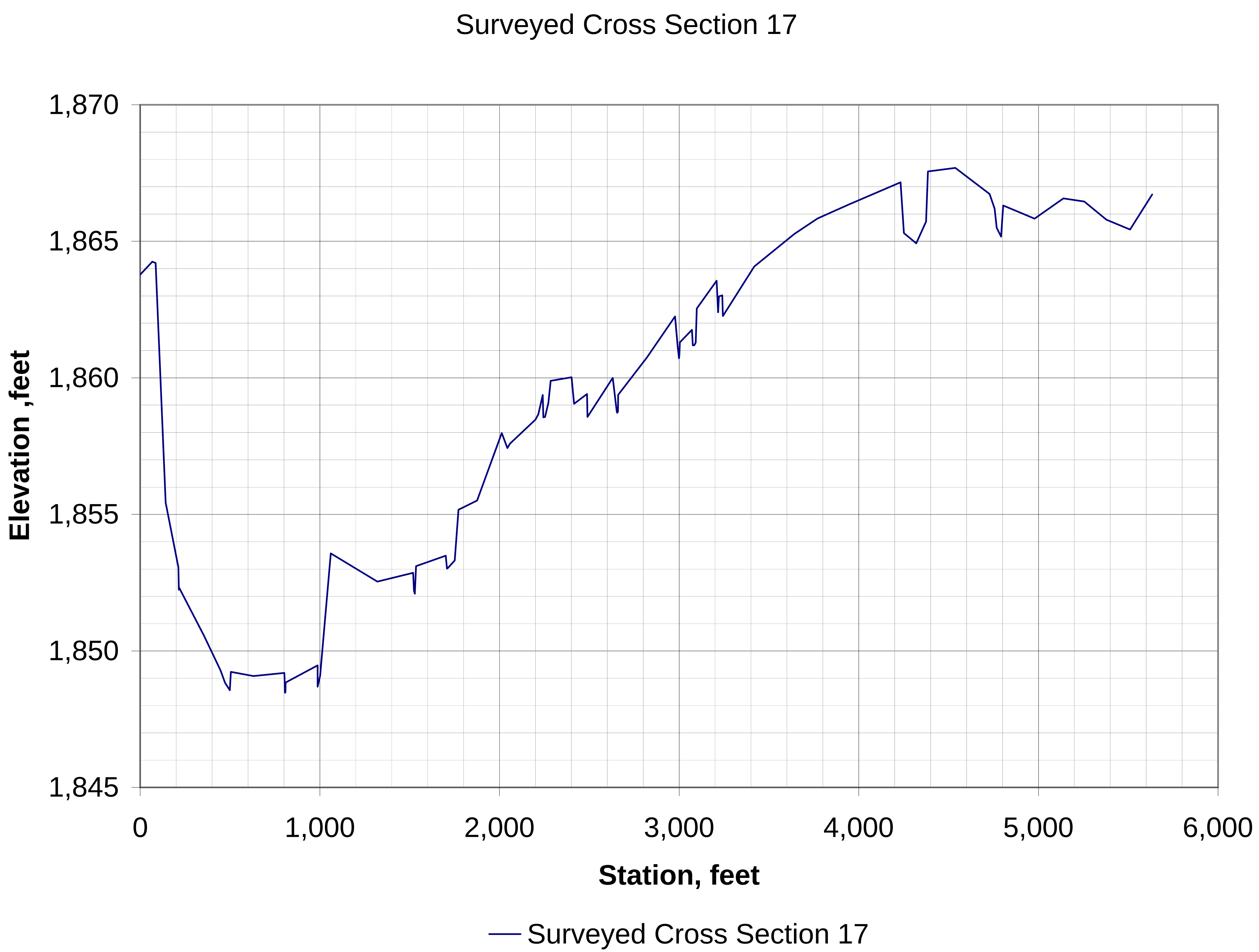


Surveyed Cross Section 15
1,930
1,925
1,920
1,915
1,910
1,905
Elevation ,feet
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
4,500
5,000
Station, feet
Surveyed Cross Section 15

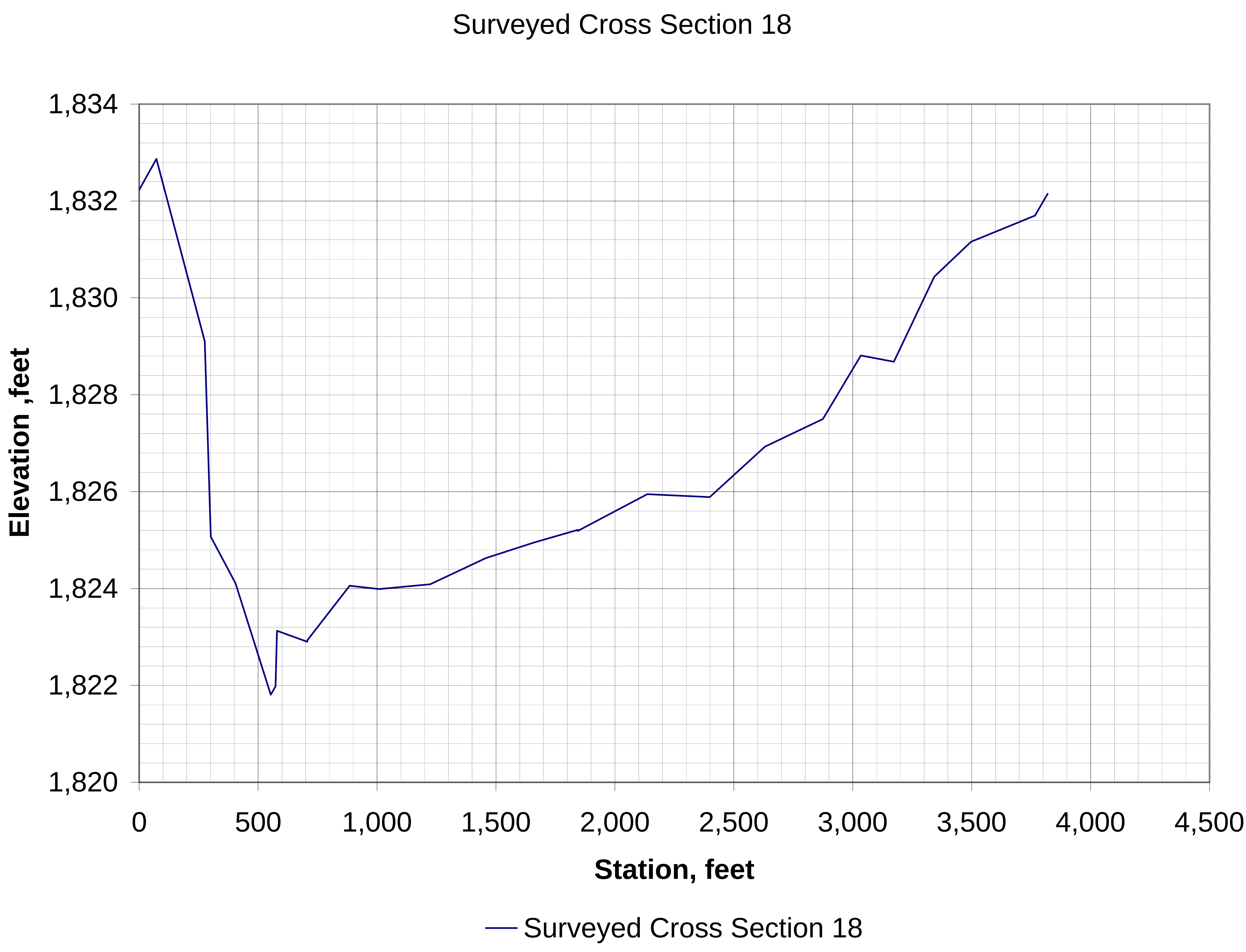


Surveyed Cross Section 16_N
1,909.0
1,908.5
1,908.0
1,907.5
1,907.0
1,906.5
1,906.0
1,905.5
1,905.0
1,904.5
1,904.0
Elevation ,feet
0
500
1,000
1,500
2,000
2,500
Station, feet
Surveyed Cross Section 16_N

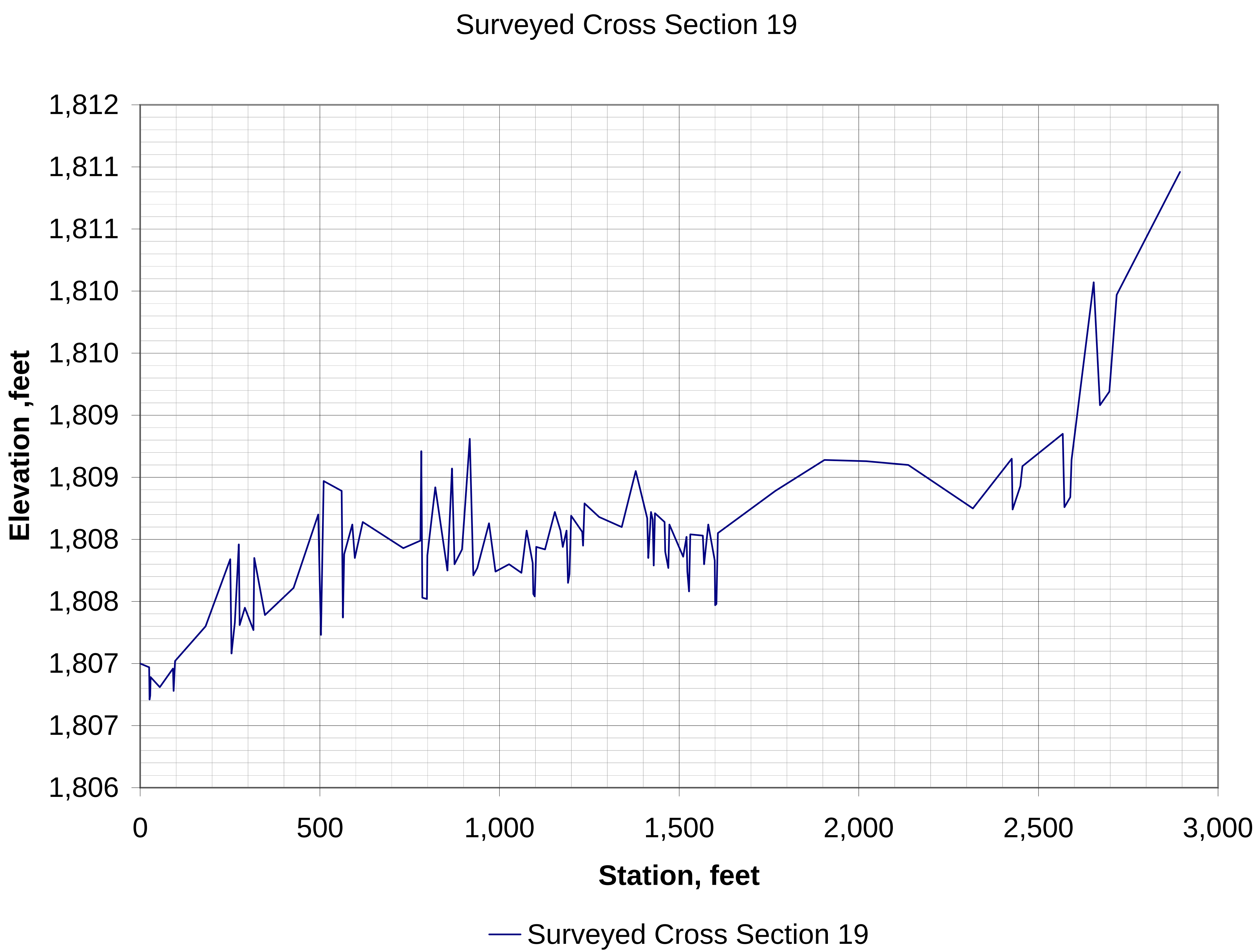

Surveyed Cross Section 16_S
Elevation ,feet
1,920
1,915
1,910
1,905
1,900
1,895
0
500
1,000
1,500
2,000
2,500
3,000
Station, feet
Surveyed Cross Section 16_S



Surveyed Cross Section 17
1,870
1,865
1,860
1,855
1,850
1,845
0
1,000
2,000
3,000
4,000
5,000
6,000
Elevation ,feet
Station, feet
Surveyed Cross Section 17



Surveyed Cross Section 18
1,834
1,832
1,830
1,828
1,826
1,824
1,822
1,820
Elevation ,feet
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
4,500
Station, feet
Surveyed Cross Section 18



Surveyed Cross Section 19
1,812
1,811
1,811
1,810
1,810
1,809
1,809
1,808
1,808
1,807
1,807
1,806
Elevation ,feet
0
500
1,000
1,500
2,000
2,500
3,000
Station, feet
Surveyed Cross Section 19

HY-8 Culvert Analysis Report

Table 1 - Summary of Culvert Flows at Crossing: Trestle 1

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
2065.40	0.00	0.00	0.00	1
2067.43	100.00	100.00	0.00	1
2068.60	200.00	200.00	0.00	1
2069.58	300.00	300.00	0.00	1
2070.46	400.00	400.00	0.00	1
2071.27	500.00	500.00	0.00	1
2072.23	600.00	600.00	0.00	1
2073.34	700.00	700.00	0.00	1
2074.08	800.00	768.90	31.09	4
2074.65	900.00	819.99	80.00	4
2075.15	1000.00	862.53	137.32	3

Rating Curve Plot for Crossing: Trestle 1

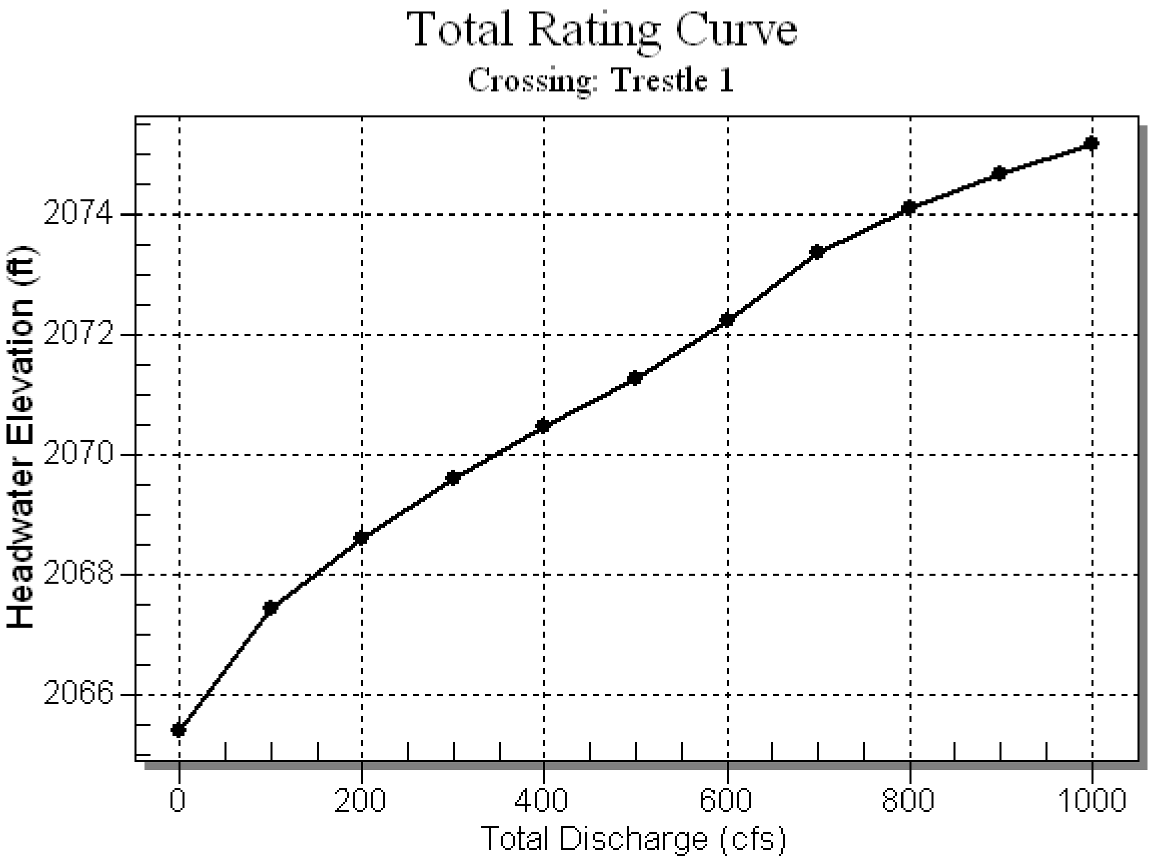


Table 2 - Culvert Summary Table: Trestle 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	2065.40	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
100.00	100.00	2067.43	1.677	2.031	3-M2t	1.576	1.232	1.344	1.344	5.857	4.281
200.00	200.00	2068.60	0.000	3.201	2-M2c	2.503	1.974	1.974	1.937	7.978	5.228
300.00	300.00	2069.58	0.000	4.184	2-M2c	3.305	2.583	2.583	2.380	9.144	5.856
400.00	400.00	2070.46	0.000	5.062	2-M2c	4.047	3.130	3.130	2.748	10.062	6.332
500.00	500.00	2071.27	0.000	5.870	2-M2c	4.900	3.634	3.634	3.065	10.835	6.725
600.00	600.00	2072.23	0.000	6.830	7-M2c	4.900	4.104	4.104	3.346	11.511	7.065
700.00	700.00	2073.34	0.000	7.941	7-M2c	4.900	4.558	4.558	3.602	12.093	7.358
800.00	768.90	2074.08	0.000	8.685	7-M2c	4.900	4.870	4.870	3.837	12.432	7.623
900.00	819.99	2074.65	0.000	9.249	6-FFc	4.900	4.900	4.900	4.056	13.177	7.861
1000.00	862.53	2075.15	0.000	9.746	6-FFc	4.900	4.900	4.900	4.261	13.860	8.080

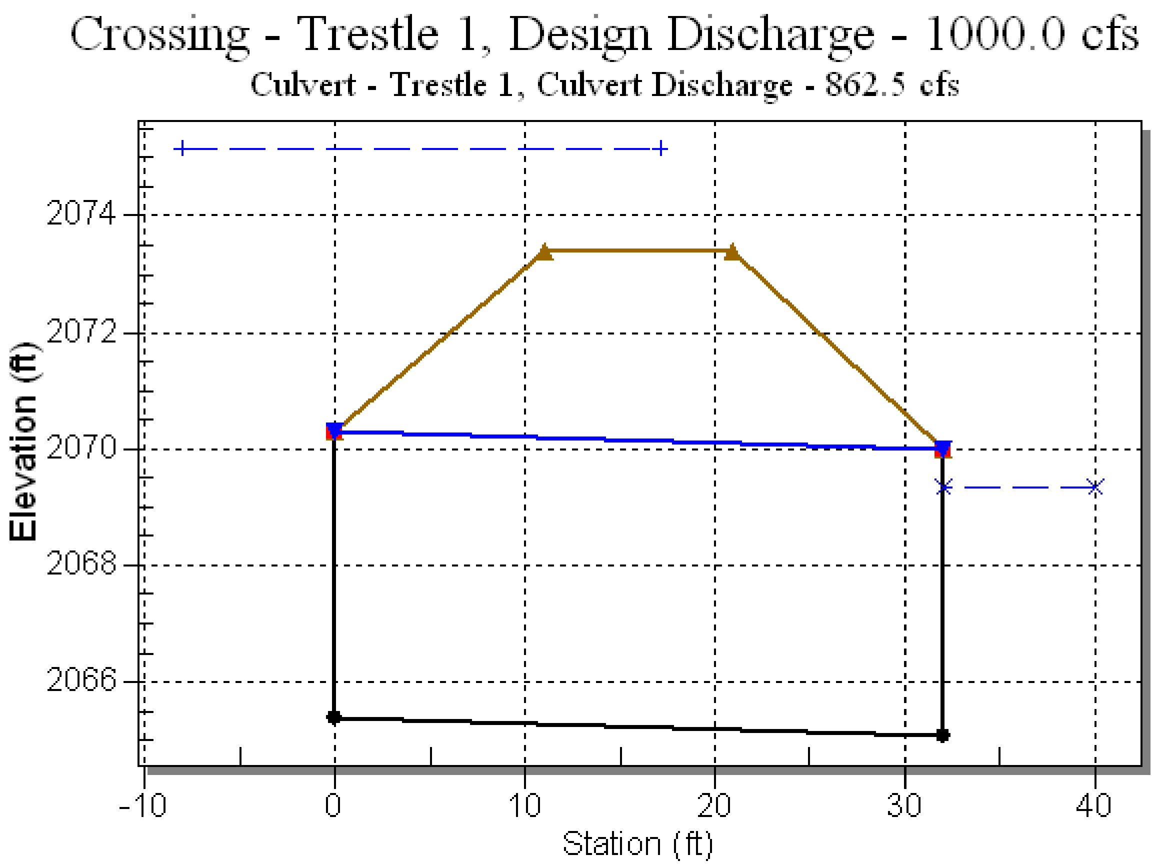
****

Inlet Elevation (invert): 2065.40 ft,   Outlet Elevation (invert): 2065.08 ft

Culvert Length: 32.00 ft,   Culvert Slope: 0.0100

****

Water Surface Profile Plot for Culvert: Trestle 1



Site Data - Trestle 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 2065.40 ft

Outlet Station: 32.00 ft

Outlet Elevation: 2065.08 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 1

Barrel Shape: User Defined

Barrel Span: 12.70 ft

Barrel Rise: 4.90 ft

Barrel Material:

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: Trestle 1)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	2065.08	0.00	0.00	0.00	0.00
100.00	2066.42	1.34	4.28	0.84	0.74
200.00	2067.02	1.94	5.23	1.21	0.78
300.00	2067.46	2.38	5.86	1.49	0.80
400.00	2067.83	2.75	6.33	1.71	0.82
500.00	2068.14	3.06	6.72	1.91	0.83
600.00	2068.43	3.35	7.07	2.09	0.84
700.00	2068.68	3.60	7.36	2.25	0.85
800.00	2068.92	3.84	7.62	2.39	0.86
900.00	2069.14	4.06	7.86	2.53	0.86
1000.00	2069.34	4.26	8.08	2.66	0.87

Tailwater Channel Data - Trestle 1

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 12.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0100

Channel Manning's n: 0.0350

Channel Invert Elevation: 2065.08 ft

Roadway Data for Crossing: Trestle 1

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 20.00 ft

Crest Elevation: 2073.40 ft

Roadway Surface: Gravel

Roadway Top Width: 10.00 ft

Table 4 - Summary of Culvert Flows at Crossing: Trestle 2

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 708.5 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
2078.50	0.00	0.00	0.00	1
2080.77	361.50	361.50	0.00	1
2082.09	723.00	723.00	0.00	1
2083.19	1084.50	1084.50	0.00	1
2084.00	1446.00	1378.61	67.25	4
2084.50	1807.50	1570.21	237.68	3
2084.94	2169.00	1720.42	447.87	3
2085.38	2530.50	1822.37	707.97	4
2085.78	2892.00	1921.05	970.91	4
2086.16	3253.50	1998.01	1255.46	4
2086.56	3615.00	2038.37	1576.90	3

Rating Curve Plot for Crossing: Trestle 2

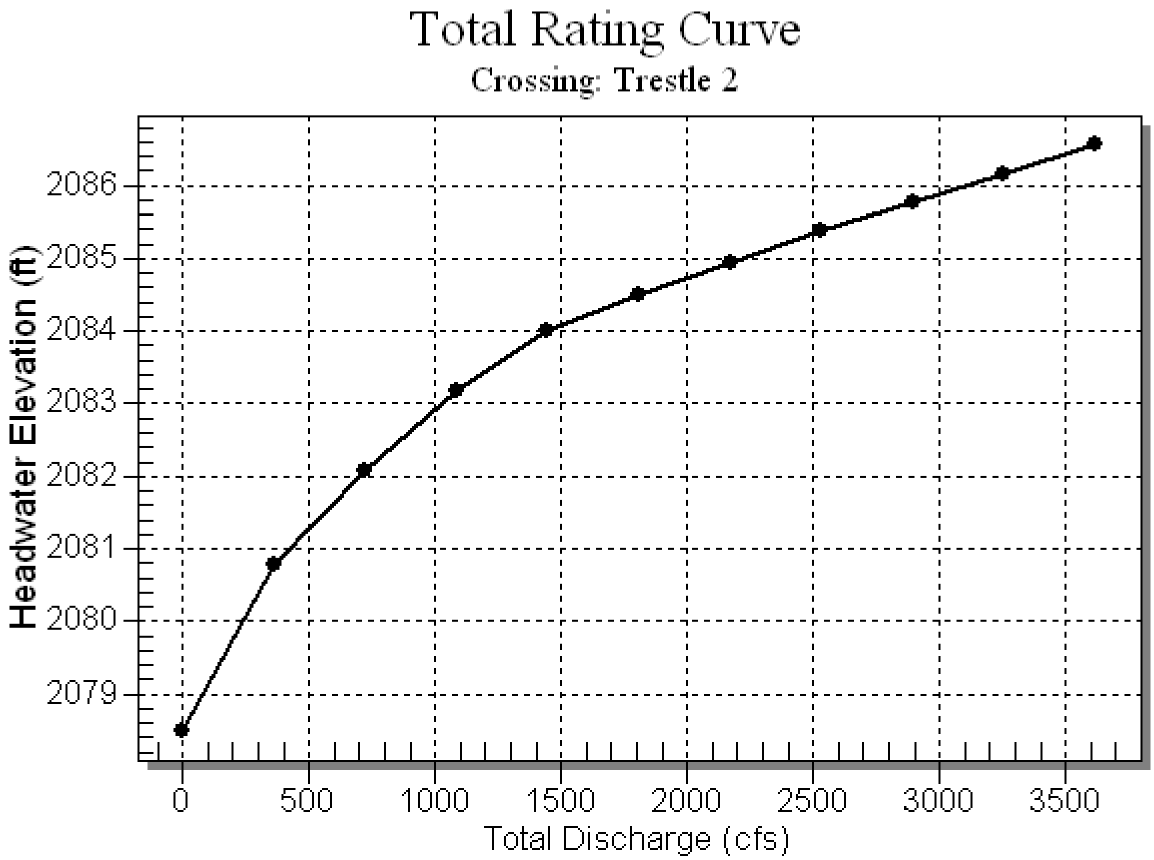


Table 5 - Culvert Summary Table: Trestle 708.5

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	2078.50	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
361.50	361.50	2080.77	1.906	2.271	3-M2t	1.667	1.410	1.430	1.430	6.653	6.884
723.00	723.00	2082.09	0.000	3.586	2-M2c	2.579	2.236	2.236	2.120	8.509	8.639
1084.50	1084.50	2083.19	0.000	4.690	2-M2c	3.341	2.932	2.932	2.655	9.734	9.815
1446.00	1378.61	2084.00	0.000	5.500	2-M2c	3.896	3.441	3.441	3.108	10.543	10.712
1807.50	1570.21	2084.50	0.000	5.997	2-M2c	4.670	3.756	3.756	3.506	11.000	11.452
2169.00	1720.42	2084.94	0.000	6.442	7-M2c	4.670	3.989	3.989	3.864	11.348	12.084
2530.50	1822.37	2085.38	0.000	6.882	7-M2t	4.670	4.148	4.192	4.192	11.441	12.639
2892.00	1921.05	2085.78	0.000	7.276	7-M2t	4.670	4.301	4.495	4.495	11.246	13.134
3253.50	1998.01	2086.16	0.000	7.664	4-FFf	4.670	4.420	4.670	4.779	11.259	13.584
3615.00	2038.37	2086.56	0.000	8.063	4-FFf	4.670	4.483	4.670	5.047	11.486	13.994

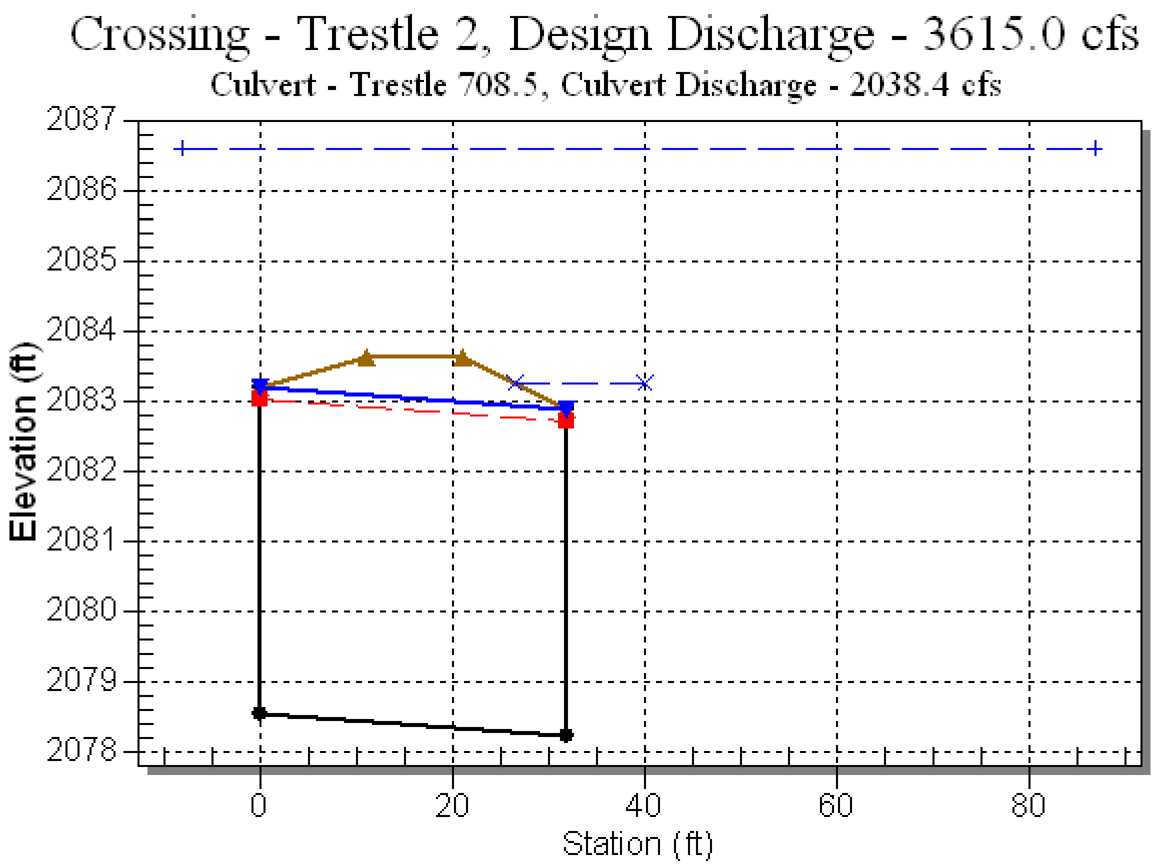
****

Inlet Elevation (invert): 2078.50 ft,   Outlet Elevation (invert): 2078.18 ft

Culvert Length: 32.00 ft,   Culvert Slope: 0.0100

****

Water Surface Profile Plot for Culvert: Trestle 708.5



Site Data - Trestle 708.5

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 2078.50 ft

Outlet Station: 32.00 ft

Outlet Elevation: 2078.18 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 708.5

Barrel Shape: User Defined

Barrel Span: 38.00 ft

Barrel Rise: 4.67 ft

Barrel Material:

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 6 - Downstream Channel Rating Curve (Crossing: Trestle 2)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	2078.18	0.00	0.00	0.00	0.00
361.50	2079.61	1.43	6.88	1.78	1.09
723.00	2080.30	2.12	8.64	2.65	1.15
1084.50	2080.83	2.65	9.82	3.31	1.19
1446.00	2081.29	3.11	10.71	3.88	1.21
1807.50	2081.69	3.51	11.45	4.37	1.23
2169.00	2082.04	3.86	12.08	4.82	1.25
2530.50	2082.37	4.19	12.64	5.23	1.26
2892.00	2082.68	4.50	13.13	5.61	1.28
3253.50	2082.96	4.78	13.58	5.96	1.29
3615.00	2083.23	5.05	13.99	6.30	1.30

Tailwater Channel Data - Trestle 2

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 31.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0200

Channel Manning's n: 0.0350

Channel Invert Elevation: 2078.18 ft

Roadway Data for Crossing: Trestle 2

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 2083.60 ft

Roadway Surface: Gravel

Roadway Top Width: 10.00 ft

Table 7 - Summary of Culvert Flows at Crossing: Trestle 4

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 709.4 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
2030.91	0.00	0.00	0.00	1
2033.91	820.90	820.90	0.00	1
2035.51	1641.80	1641.80	0.00	1
2037.03	2462.70	2462.70	0.00	1
2038.89	3283.60	3240.01	43.56	4
2040.25	4104.50	3635.74	468.73	4
2041.38	4925.40	3901.21	1025.27	3
2042.40	5746.30	4123.82	1622.21	3
2043.35	6567.20	4319.69	2247.50	3
2044.24	7388.10	4494.99	2893.08	3
2045.08	8209.00	4656.07	3552.49	3

Rating Curve Plot for Crossing: Trestle 4

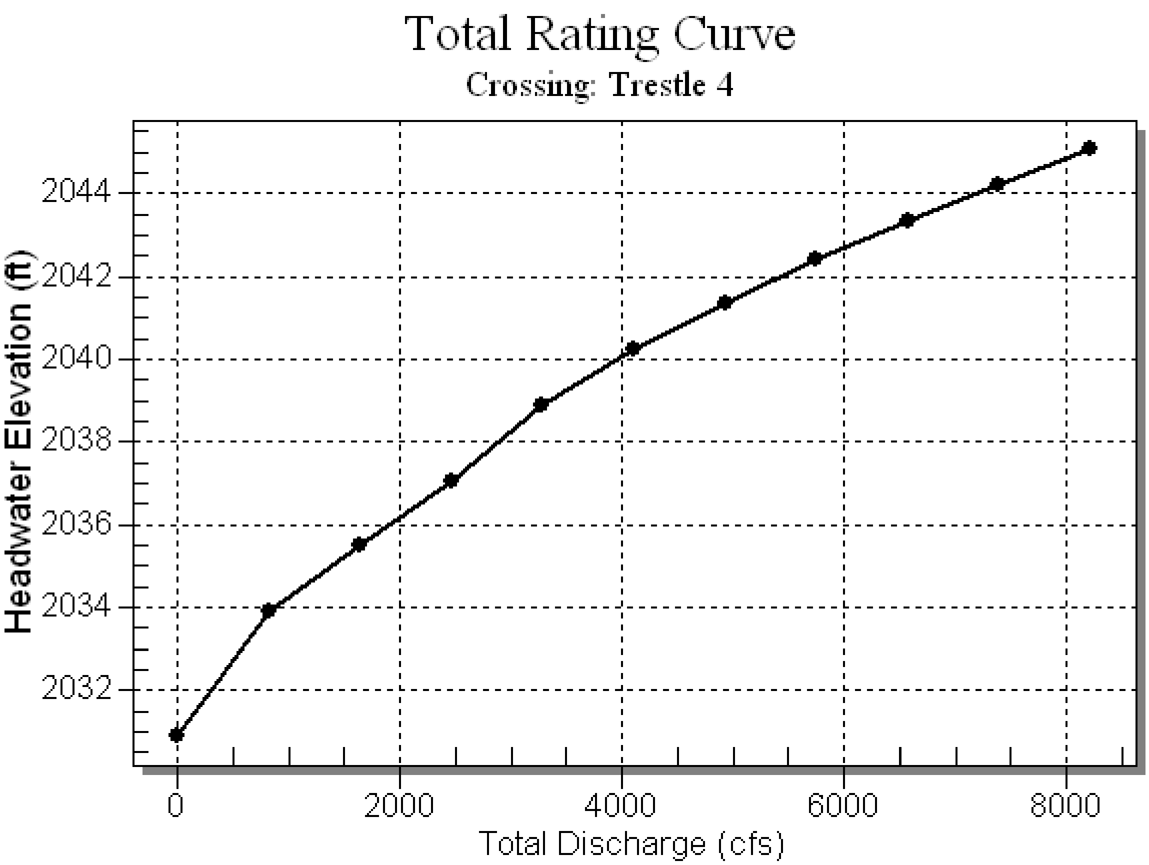


Table 8 - Culvert Summary Table: Trestle 709.4

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	2030.91	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
820.90	820.90	2033.91	2.232	3.000	3-M1t	2.578	1.646	2.600	2.600	4.644	4.028
1641.80	1641.80	2035.51	0.000	4.603	3-M2t	3.973	2.620	3.868	3.868	6.242	5.085
2462.70	2462.70	2037.03	0.000	6.125	4-FFf	4.830	3.439	4.830	4.862	7.498	5.793
3283.60	3240.01	2038.89	0.000	7.977	4-FFf	4.830	4.128	4.830	5.703	9.865	6.340
4104.50	3635.74	2040.25	0.000	9.341	4-FFf	4.830	4.465	4.830	6.446	11.070	6.790
4925.40	3901.21	2041.38	0.000	10.469	4-FFf	4.830	4.692	4.830	7.117	11.878	7.174
5746.30	4123.82	2042.40	0.000	11.492	4-FFf	4.830	4.830	4.830	7.733	12.556	7.511
6567.20	4319.69	2043.35	0.000	12.439	4-FFf	4.830	4.830	4.830	8.303	13.152	7.814
7388.10	4494.99	2044.24	0.000	13.328	4-FFf	4.830	4.830	4.830	8.840	13.686	8.086
8209.00	4656.07	2045.08	0.000	14.169	4-FFf	4.830	4.830	4.830	9.345	14.176	8.336

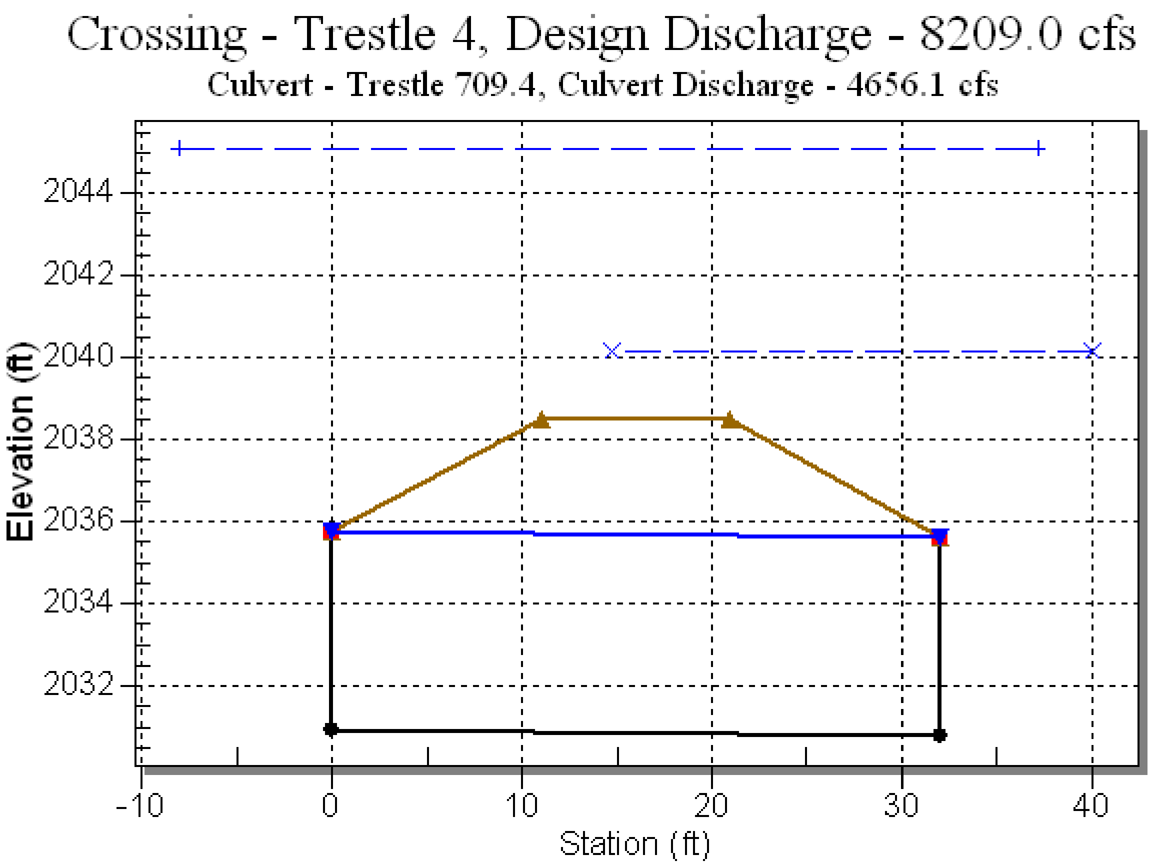
****

Inlet Elevation (invert): 2030.91 ft, Outlet Elevation (invert): 2030.79 ft

Culvert Length: 32.00 ft, Culvert Slope: 0.0038

****

Water Surface Profile Plot for Culvert: Trestle 709.4



Site Data - Trestle 709.4

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 2030.91 ft

Outlet Station: 32.00 ft

Outlet Elevation: 2030.79 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 709.4

Barrel Shape: User Defined

Barrel Span: 68.00 ft

Barrel Rise: 4.83 ft

Barrel Material:

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 9 - Downstream Channel Rating Curve (Crossing: Trestle 4)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	2030.79	0.00	0.00	0.00	0.00
820.90	2033.39	2.60	4.03	0.49	0.47
1641.80	2034.66	3.87	5.09	0.72	0.50
2462.70	2035.65	4.86	5.79	0.91	0.51
3283.60	2036.49	5.70	6.34	1.07	0.52
4104.50	2037.24	6.45	6.79	1.21	0.53
4925.40	2037.91	7.12	7.17	1.33	0.54
5746.30	2038.52	7.73	7.51	1.45	0.55
6567.20	2039.09	8.30	7.81	1.55	0.55
7388.10	2039.63	8.84	8.09	1.65	0.56
8209.00	2040.13	9.34	8.34	1.75	0.56

Tailwater Channel Data - Trestle 4

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 68.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0030

Channel Manning's n: 0.0350

Channel Invert Elevation: 2030.79 ft

Roadway Data for Crossing: Trestle 4

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 68.00 ft

Crest Elevation: 2038.50 ft

Roadway Surface: Gravel

Roadway Top Width: 10.00 ft

Table 10 - Summary of Culvert Flows at Crossing: Trestle 5

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 709.5 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
2023.17	0.00	0.00	0.00	1
2031.30	737.40	737.40	0.00	1
2036.02	1474.80	1067.93	406.86	7
2038.64	2212.20	1176.11	1036.08	5
2040.81	2949.60	1261.47	1688.12	5
2042.74	3687.00	1336.37	2350.27	3
2044.51	4424.40	1404.79	3019.60	4
2046.16	5161.80	1468.39	3693.41	4
2047.72	5899.20	1528.04	4371.15	4
2049.21	6636.60	1584.63	5051.96	4
2050.65	7374.00	1638.43	5735.57	4

Rating Curve Plot for Crossing: Trestle 5

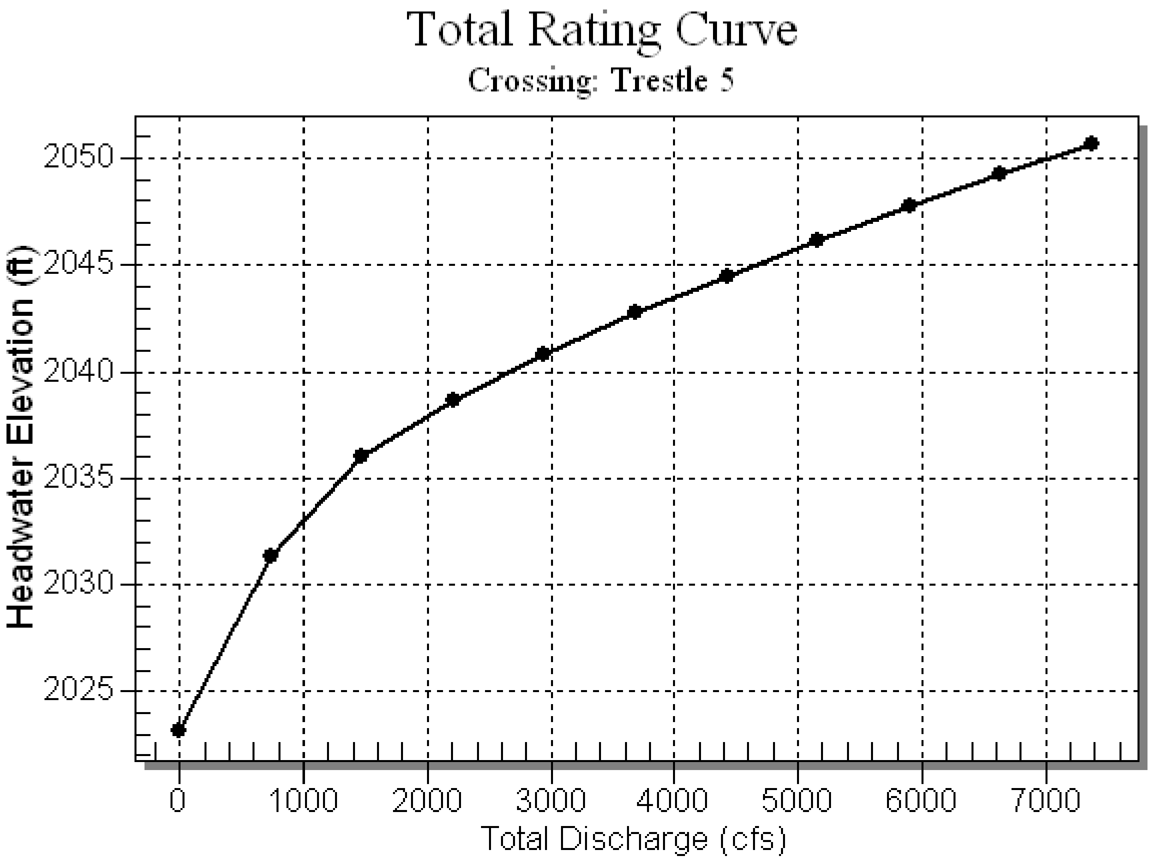


Table 11 - Culvert Summary Table: Trestle 709.5

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	2023.17	0.000	0.170	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
737.40	737.40	2031.30	0.000	8.301	4-FFf	4.000	3.854	4.000	5.809	10.687	3.155
1474.80	1067.93	2036.02	0.000	13.024	4-FFf	4.000	4.000	4.000	7.983	15.477	3.776
2212.20	1176.11	2038.64	0.000	15.638	4-FFf	4.000	4.000	4.000	9.561	17.045	4.188
2949.60	1261.47	2040.81	0.000	17.808	4-FFf	4.000	4.000	4.000	10.842	18.282	4.507
3687.00	1336.37	2042.74	0.000	19.735	4-FFf	4.000	4.000	4.000	11.938	19.368	4.770
4424.40	1404.79	2044.51	0.000	21.505	4-FFf	4.000	4.000	4.000	12.907	20.359	4.995
5161.80	1468.39	2046.16	0.000	23.159	4-FFf	4.000	4.000	4.000	13.781	21.281	5.194
5899.20	1528.04	2047.72	0.000	24.722	4-FFf	4.000	4.000	4.000	14.581	22.146	5.372
6636.60	1584.63	2049.21	0.000	26.214	4-FFf	4.000	4.000	4.000	15.321	22.966	5.534
7374.00	1638.43	2050.65	0.000	27.646	4-FFf	4.000	4.000	4.000	16.012	23.745	5.682

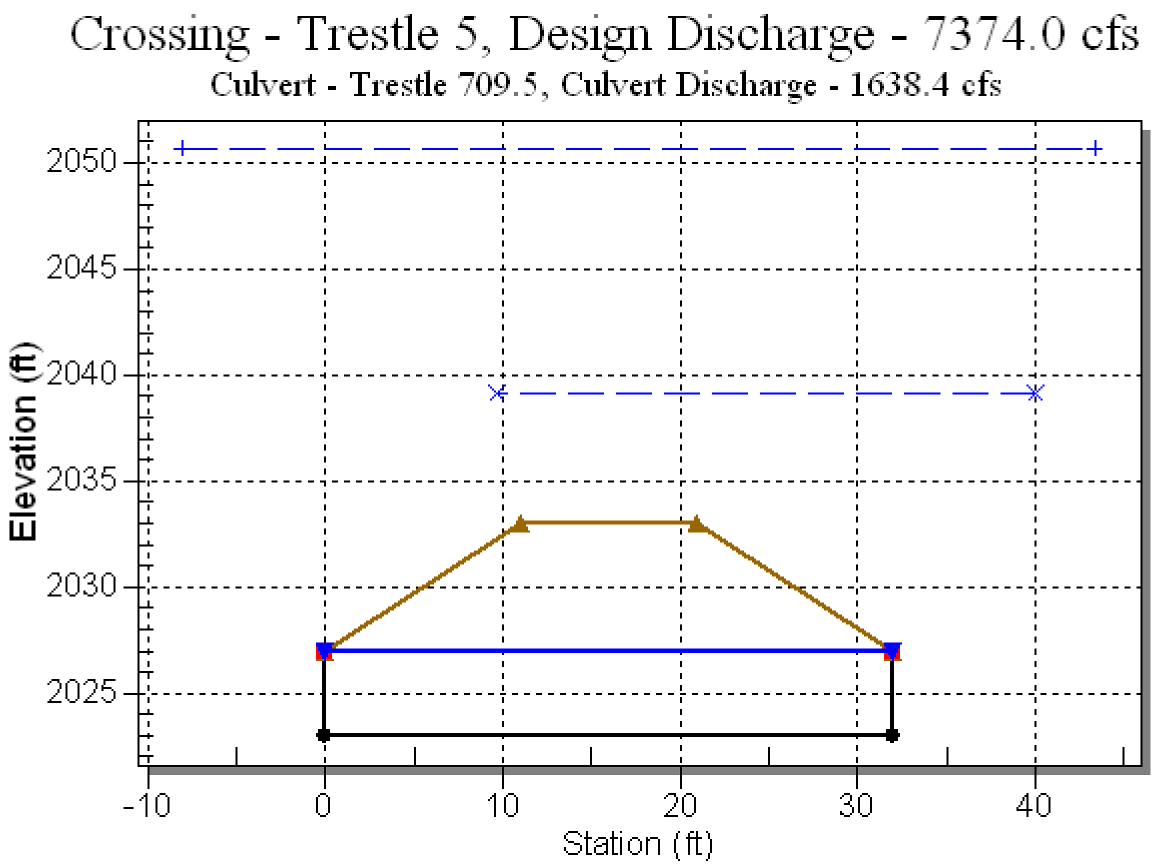
****

Inlet Elevation (invert): 2023.00 ft,   Outlet Elevation (invert): 2023.00 ft

Culvert Length: 32.00 ft,   Culvert Slope: 0.0000

****

Water Surface Profile Plot for Culvert: Trestle 709.5



Site Data - Trestle 709.5

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 2023.00 ft

Outlet Station: 32.00 ft

Outlet Elevation: 2023.00 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 709.5

Barrel Shape: User Defined

Barrel Span: 17.25 ft

Barrel Rise: 4.00 ft

Barrel Material:

Barrel Manning's n: 0.0150 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 12 - Downstream Channel Rating Curve (Crossing: Trestle 5)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	2023.17	0.00	0.00	0.00	0.00
737.40	2028.98	5.81	3.16	0.36	0.29
1474.80	2031.15	7.98	3.78	0.50	0.30
2212.20	2032.73	9.56	4.19	0.60	0.31
2949.60	2034.01	10.84	4.51	0.68	0.32
3687.00	2035.11	11.94	4.77	0.74	0.32
4424.40	2036.08	12.91	4.99	0.81	0.32
5161.80	2036.95	13.78	5.19	0.86	0.33
5899.20	2037.75	14.58	5.37	0.91	0.33
6636.60	2038.49	15.32	5.53	0.96	0.33
7374.00	2039.18	16.01	5.68	1.00	0.33

Tailwater Channel Data - Trestle 5

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 17.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0010

Channel Manning's n: 0.0350

Channel Invert Elevation: 2023.17 ft

Roadway Data for Crossing: Trestle 5

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 25.00 ft

Crest Elevation: 2033.00 ft

Roadway Surface: Gravel

Roadway Top Width: 10.00 ft

Table 13 - Summary of Culvert Flows at Crossing: Trestle 6

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 710.1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1989.80	0.00	0.00	0.00	1
1995.47	1179.70	1179.70	0.00	1
1998.80	2359.40	2359.40	0.00	1
2001.94	3539.10	3539.10	0.00	1
2004.25	4718.80	4309.12	409.35	5
2005.96	5898.50	4815.15	1083.31	4
2007.52	7078.20	5234.69	1843.46	4
2009.10	8257.90	5513.19	2744.67	4
2010.60	9437.60	5738.46	3699.11	4
2012.00	10617.30	5942.79	4674.48	4
2013.33	11797.00	6130.70	5666.27	4

Rating Curve Plot for Crossing: Trestle 6

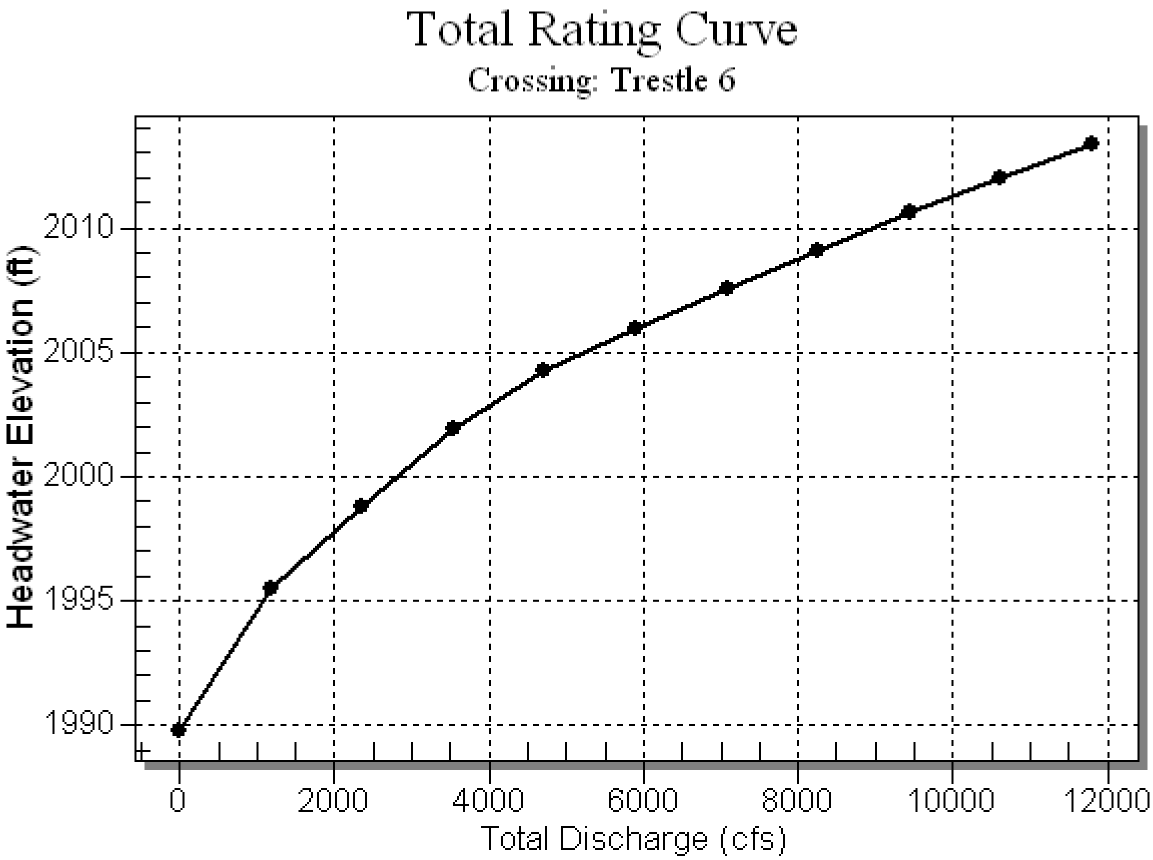


Table 14 - Culvert Summary Table: Trestle 710.1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	1989.80	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
1179.70	1179.70	1995.47	0.000	5.672	2-M2c	3.891	3.545	3.545	3.128	10.734	8.667
2359.40	2359.40	1998.80	0.000	9.000	2-M2c	6.169	5.644	5.644	4.523	13.486	10.625
3539.10	3539.10	2001.94	0.000	12.138	7-M2c	8.000	7.404	7.404	5.574	15.419	11.913
4718.80	4309.12	2004.25	0.000	14.455	6-FFc	8.000	8.000	8.000	6.444	17.375	12.898
5898.50	4815.15	2005.96	0.000	16.159	6-FFc	8.000	8.000	8.000	7.198	19.416	13.704
7078.20	5234.69	2007.52	0.000	17.716	6-FFc	8.000	8.000	8.000	7.870	21.108	14.395
8257.90	5513.19	2009.10	0.000	19.301	4-FFf	8.000	8.000	8.000	8.480	22.231	14.999
9437.60	5738.46	2010.60	0.000	20.797	4-FFf	8.000	8.000	8.000	9.041	23.139	15.542
10617.30	5942.79	2012.00	0.000	22.199	4-FFf	8.000	8.000	8.000	9.562	23.963	16.035
11797.00	6130.70	2013.33	0.000	23.526	4-FFf	8.000	8.000	8.000	10.051	24.721	16.483

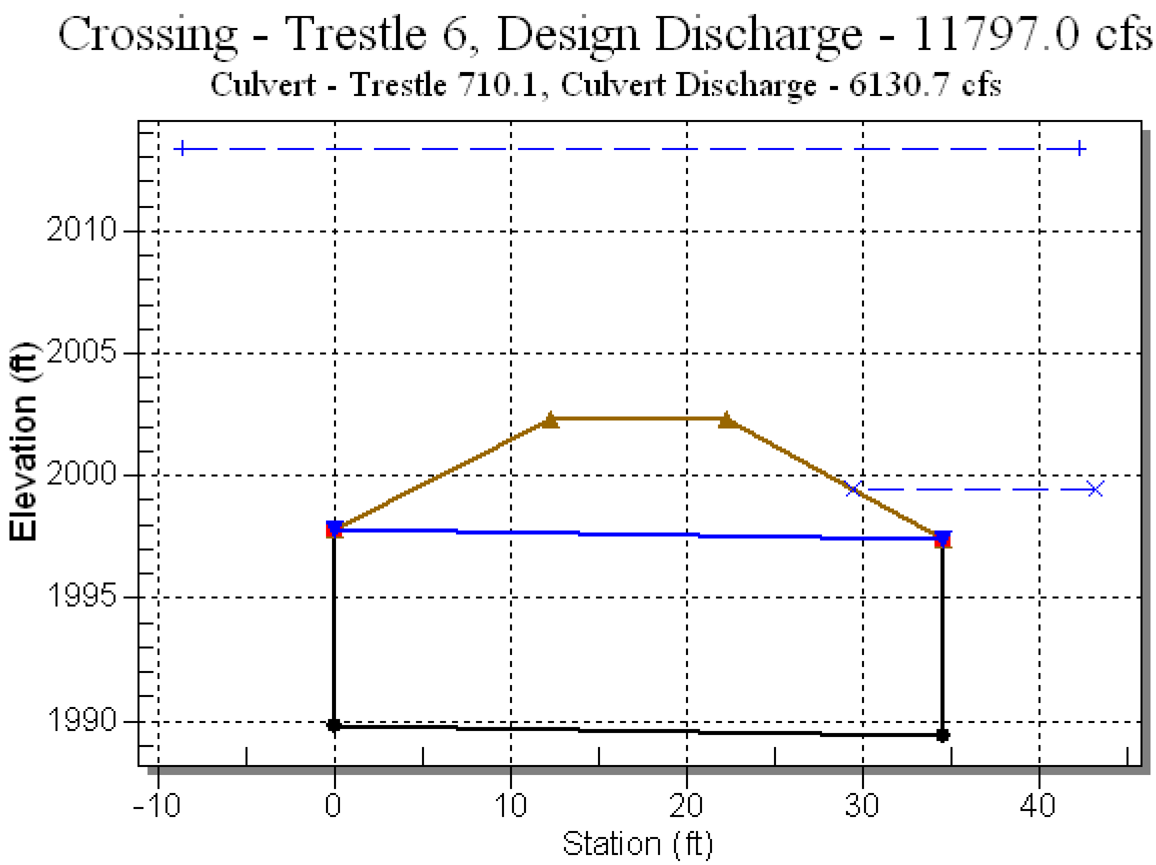
****

Inlet Elevation (invert): 1989.80 ft,   Outlet Elevation (invert): 1989.40 ft

Culvert Length: 34.50 ft,   Culvert Slope: 0.0116

****

Water Surface Profile Plot for Culvert: Trestle 710.1



Site Data - Trestle 710.1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1989.80 ft

Outlet Station: 34.50 ft

Outlet Elevation: 1989.40 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 710.1

Barrel Shape: User Defined

Barrel Span: 31.00 ft

Barrel Rise: 8.00 ft

Barrel Material:

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 15 - Downstream Channel Rating Curve (Crossing: Trestle 6)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	1989.40	0.00	0.00	0.00	0.00
1179.70	1992.53	3.13	8.67	2.54	0.98
2359.40	1993.92	4.52	10.62	3.67	1.03
3539.10	1994.97	5.57	11.91	4.52	1.06
4718.80	1995.84	6.44	12.90	5.23	1.08
5898.50	1996.60	7.20	13.70	5.84	1.10
7078.20	1997.27	7.87	14.40	6.38	1.11
8257.90	1997.88	8.48	15.00	6.88	1.12
9437.60	1998.44	9.04	15.54	7.33	1.13
10617.30	1998.96	9.56	16.04	7.76	1.14
11797.00	1999.45	10.05	16.48	8.15	1.15

Tailwater Channel Data - Trestle 6

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 31.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0130

Channel Manning's n: 0.0350

Channel Invert Elevation: 1989.40 ft

Roadway Data for Crossing: Trestle 6

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 50.00 ft

Crest Elevation: 2002.30 ft

Roadway Surface: Gravel

Roadway Top Width: 10.00 ft

Table 16 - Summary of Culvert Flows at Crossing: Trestle 7

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 710.8 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1960.75	0.00	0.00	0.00	1
1960.75	935.50	935.50	0.00	1
1971.59	1871.00	1647.46	223.47	8
1973.76	2806.50	1788.88	1017.49	5
1975.48	3742.00	1889.90	1852.06	4
1976.98	4677.50	1974.35	2703.09	4
1978.34	5613.00	2049.71	3563.23	4
1979.61	6548.50	2118.60	4429.85	4
1980.80	7484.00	2183.03	5300.93	4
1981.93	8419.50	2243.71	6175.76	4
1983.01	9355.00	2301.38	7053.60	4

Rating Curve Plot for Crossing: Trestle 7

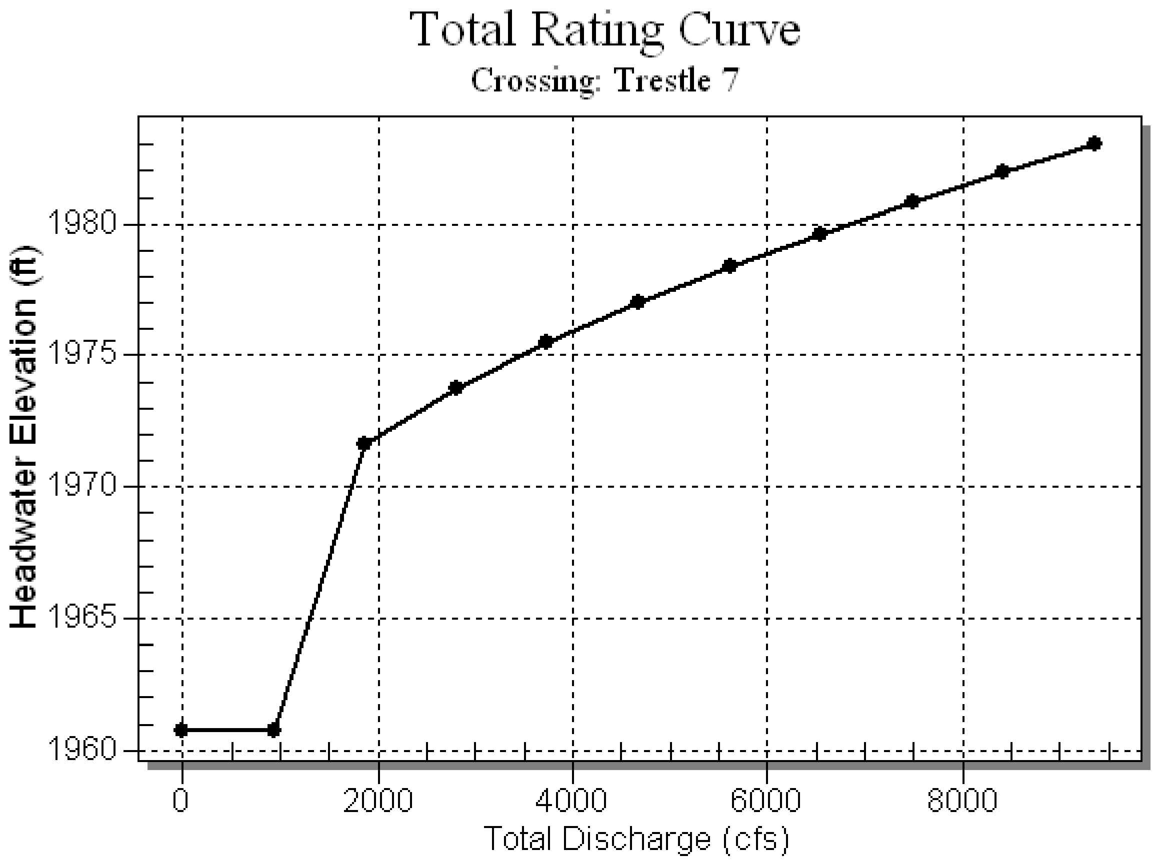


Table 17 - Culvert Summary Table: Trestle 710.8

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	1960.75	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
935.50	935.50	1960.75	0.000	0.000	1-S2n	2.559	3.573	3.055	3.288	12.344	7.268
1871.00	1647.46	1971.59	0.000	10.841	4-FFf	3.780	3.780	3.780	4.712	17.408	8.853
2806.50	1788.88	1973.76	0.000	13.010	4-FFf	3.780	3.780	3.780	5.775	18.902	9.898
3742.00	1889.90	1975.48	0.000	14.732	4-FFf	3.780	3.780	3.780	6.651	19.969	10.696
4677.50	1974.35	1976.98	0.000	16.231	4-FFf	3.780	3.780	3.780	7.407	20.862	11.352
5613.00	2049.71	1978.34	0.000	17.593	4-FFf	3.780	3.780	3.780	8.079	21.658	11.914
6548.50	2118.60	1979.61	0.000	18.857	4-FFf	3.780	3.780	3.780	8.689	22.386	12.405
7484.00	2183.03	1980.80	0.000	20.047	4-FFf	3.780	3.780	3.780	9.248	23.067	12.848
8419.50	2243.71	1981.93	0.000	21.177	4-FFf	3.780	3.780	3.780	9.767	23.708	13.249
9355.00	2301.38	1983.01	0.000	22.260	4-FFf	3.780	3.780	3.780	10.252	24.317	13.617

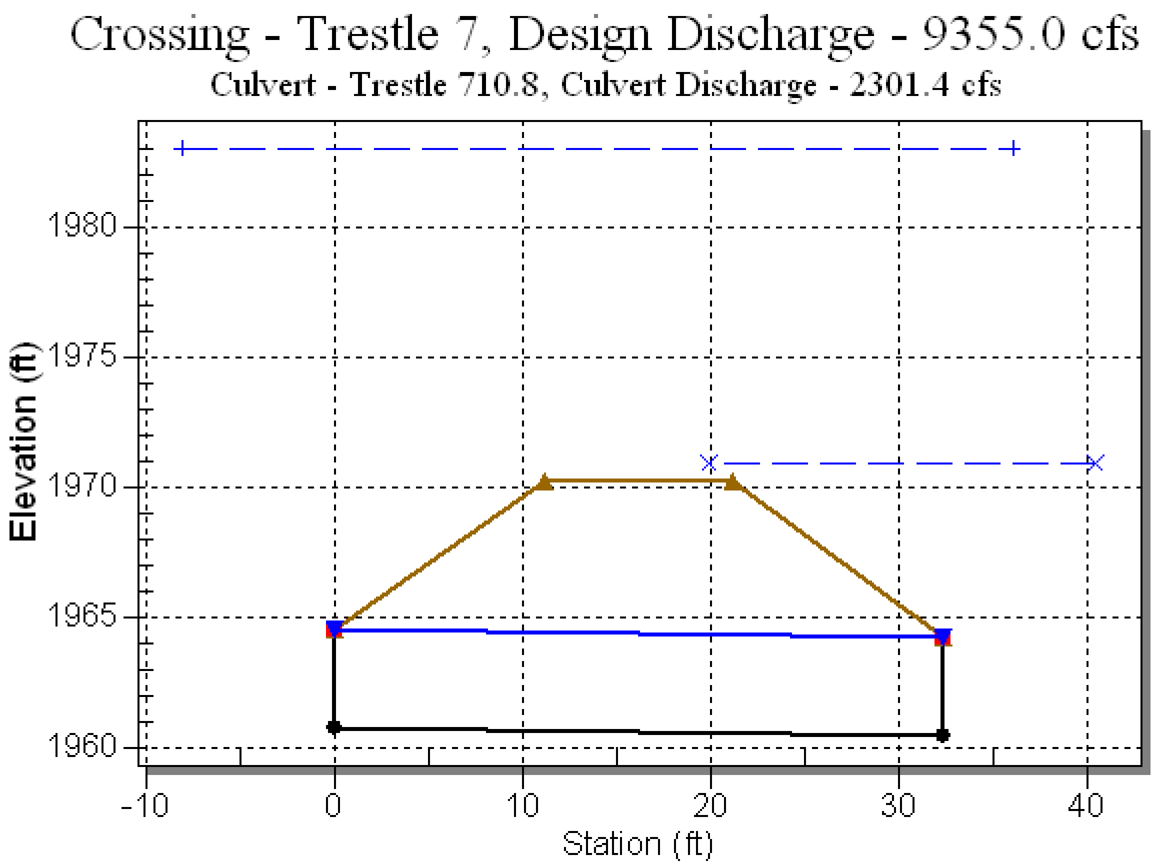
****

Inlet Elevation (invert): 1960.75 ft,   Outlet Elevation (invert): 1960.47 ft

Culvert Length: 32.35 ft,   Culvert Slope: 0.0087

****

Water Surface Profile Plot for Culvert: Trestle 710.8



Site Data - Trestle 710.8

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1960.75 ft

Outlet Station: 32.35 ft

Outlet Elevation: 1960.47 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 710.8

Barrel Shape: User Defined

Barrel Span: 26.00 ft

Barrel Rise: 3.78 ft

Barrel Material:

Barrel Manning's n: 0.0150 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 18 - Downstream Channel Rating Curve (Crossing: Trestle 7)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	1960.70	0.00	0.00	0.00	0.00
935.50	1963.99	3.29	7.27	1.85	0.82
1871.00	1965.41	4.71	8.85	2.65	0.86
2806.50	1966.47	5.77	9.90	3.24	0.88
3742.00	1967.35	6.65	10.70	3.74	0.90
4677.50	1968.11	7.41	11.35	4.16	0.91
5613.00	1968.78	8.08	11.91	4.54	0.92
6548.50	1969.39	8.69	12.41	4.88	0.93
7484.00	1969.95	9.25	12.85	5.19	0.94
8419.50	1970.47	9.77	13.25	5.49	0.95
9355.00	1970.95	10.25	13.62	5.76	0.95

Tailwater Channel Data - Trestle 7

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 26.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0090

Channel Manning's n: 0.0350

Channel Invert Elevation: 1960.70 ft

Roadway Data for Crossing: Trestle 7

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 50.00 ft

Crest Elevation: 1970.25 ft

Roadway Surface: Gravel

Roadway Top Width: 10.00 ft

Table 19 - Summary of Culvert Flows at Crossing: Trestle 9

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 713.3 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1841.20	0.00	0.00	0.00	1
1848.52	1616.40	899.99	716.26	8
1851.70	3232.80	1058.66	2174.05	6
1854.10	4849.20	1163.96	3685.18	5
1856.17	6465.60	1251.38	5213.49	4
1858.09	8082.00	1331.98	6750.02	4
1859.91	9698.40	1408.15	8290.24	4
1861.63	11314.80	1478.60	9836.19	4
1863.26	12931.20	1544.18	11387.00	4
1864.82	14547.60	1605.68	12941.91	4
1866.33	16164.00	1663.91	14500.08	4

Rating Curve Plot for Crossing: Trestle 9

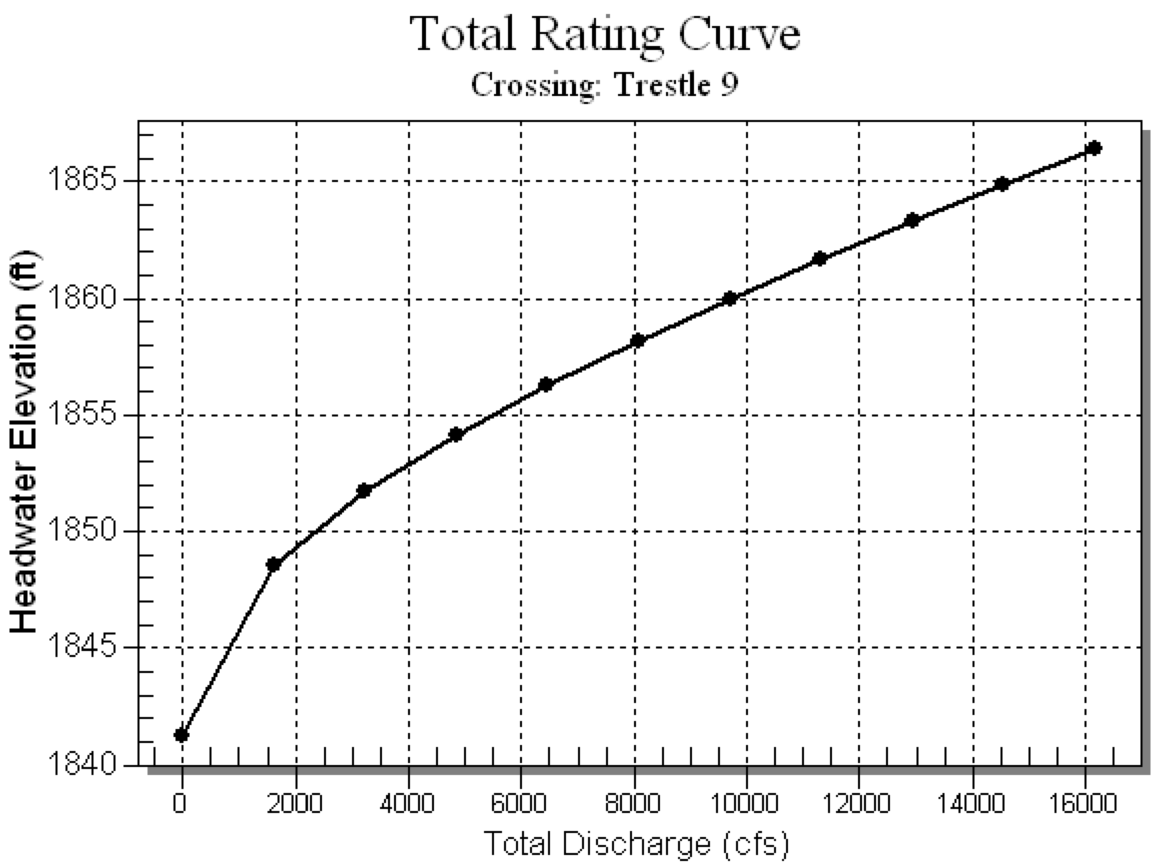


Table 20 - Culvert Summary Table: Trestle 713.3

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	1841.20	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
1616.40	899.99	1848.52	0.000	7.321	4-FFf	2.300	2.300	2.300	3.787	9.967	7.469
3232.80	1058.66	1851.70	0.000	10.501	4-FFf	2.300	2.300	2.300	5.499	11.724	9.186
4849.20	1163.96	1854.10	0.000	12.902	4-FFf	2.300	2.300	2.300	6.796	12.890	10.315
6465.60	1251.38	1856.17	0.000	14.974	4-FFf	2.300	2.300	2.300	7.871	13.858	11.179
8082.00	1331.98	1858.09	0.000	16.891	4-FFf	2.300	2.300	2.300	8.805	14.751	11.887
9698.40	1408.15	1859.91	0.000	18.710	4-FFf	2.300	2.300	2.300	9.638	15.594	12.491
11314.80	1478.60	1861.63	0.000	20.427	4-FFf	2.300	2.300	2.300	10.395	16.374	13.024
12931.20	1544.18	1863.26	0.000	22.059	4-FFf	2.300	2.300	2.300	11.091	17.101	13.499
14547.60	1605.68	1864.82	0.000	23.624	4-FFf	2.300	2.300	2.300	11.741	17.782	13.927
16164.00	1663.91	1866.33	0.000	25.129	4-FFf	2.300	2.300	2.300	12.348	18.426	14.324

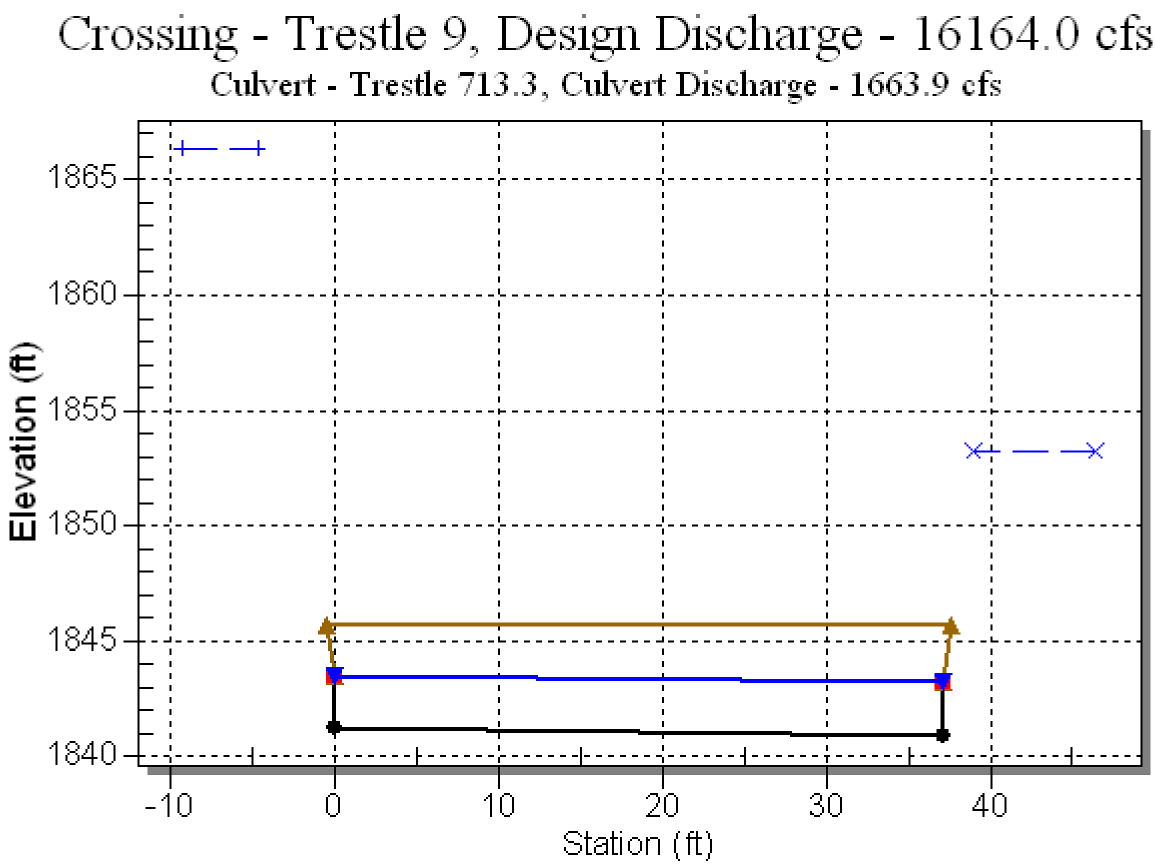
****

Inlet Elevation (invert): 1841.20 ft,   Outlet Elevation (invert): 1840.90 ft

Culvert Length: 37.10 ft,   Culvert Slope: 0.0081

****

Water Surface Profile Plot for Culvert: Trestle 713.3



Site Data - Trestle 713.3

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1841.20 ft

Outlet Station: 37.10 ft

Outlet Elevation: 1840.90 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 713.3

Barrel Shape: User Defined

Barrel Span: 42.00 ft

Barrel Rise: 2.30 ft

Barrel Material:

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 21 - Downstream Channel Rating Curve (Crossing: Trestle 9)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	1840.91	0.00	0.00	0.00	0.00
1616.40	1844.70	3.79	7.47	1.73	0.76
3232.80	1846.41	5.50	9.19	2.50	0.80
4849.20	1847.71	6.80	10.31	3.10	0.82
6465.60	1848.78	7.87	11.18	3.59	0.84
8082.00	1849.71	8.80	11.89	4.01	0.85
9698.40	1850.55	9.64	12.49	4.39	0.86
11314.80	1851.30	10.39	13.02	4.73	0.87
12931.20	1852.00	11.09	13.50	5.05	0.88
14547.60	1852.65	11.74	13.93	5.35	0.89
16164.00	1853.26	12.35	14.32	5.62	0.89

Tailwater Channel Data - Trestle 9

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 42.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0073

Channel Manning's n: 0.0350

Channel Invert Elevation: 1840.91 ft

Roadway Data for Crossing: Trestle 9

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 50.00 ft

Crest Elevation: 1845.70 ft

Roadway Surface: Gravel

Roadway Top Width: 38.00 ft

Table 22 - Summary of Culvert Flows at Crossing: Trestle 10

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 714.9 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1798.60	0.00	0.00	0.00	1
1803.27	1450.00	1450.00	0.00	1
1805.87	2900.00	2900.00	0.00	1
1808.16	4350.00	4350.00	0.00	1
1810.23	5800.00	5566.16	233.72	5
1812.06	7250.00	6274.63	975.39	4
1813.82	8700.00	6766.89	1933.10	4
1815.42	10150.00	7181.15	2968.84	4
1817.00	11600.00	7582.52	4017.10	4
1818.38	13050.00	7904.32	5145.64	4
1819.67	14500.00	8193.75	6306.24	4

Rating Curve Plot for Crossing: Trestle 10

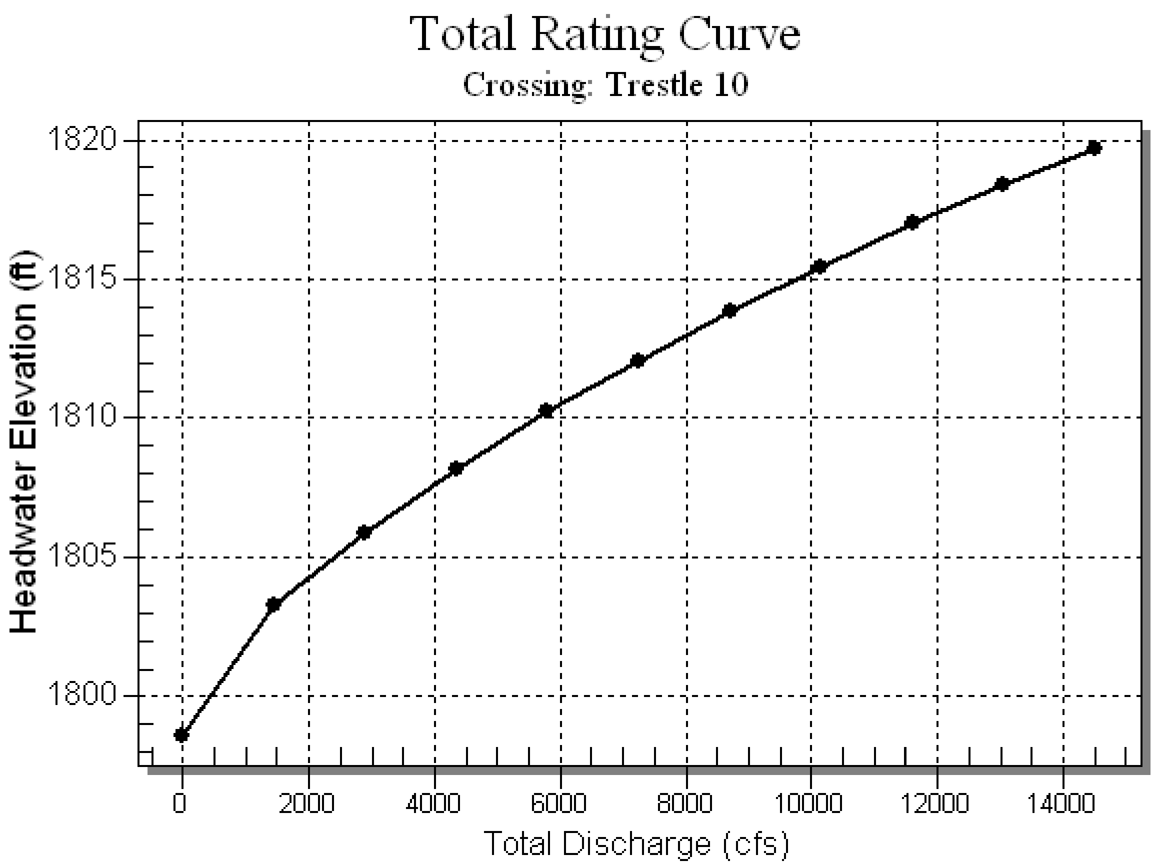


Table 23 - Culvert Summary Table: Trestle 714.9

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	1798.60	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
1450.00	1450.00	1803.27	0.000	4.674	2-M2c	6.500	2.975	2.975	2.856	9.501	7.643
2900.00	2900.00	1805.87	0.000	7.269	2-M2c	6.500	4.618	4.618	4.220	11.936	9.561
4350.00	4350.00	1808.16	0.000	9.562	7-M2c	6.500	5.997	5.997	5.277	13.644	10.831
5800.00	5566.16	1810.23	0.000	11.628	6-FFc	6.500	6.500	6.500	6.165	16.064	11.810
7250.00	6274.63	1812.06	0.000	13.463	4-FFf	6.500	6.500	6.500	6.945	18.109	12.611
8700.00	6766.89	1813.82	0.000	15.225	4-FFf	6.500	6.500	6.500	7.644	19.529	13.299
10150.00	7181.15	1815.42	0.000	16.822	4-FFf	6.500	6.500	6.500	8.285	20.725	13.899
11600.00	7582.52	1817.00	0.000	18.398	4-FFf	6.500	6.500	6.500	8.880	21.883	14.432
13050.00	7904.32	1818.38	0.000	19.775	4-FFf	6.500	6.500	6.500	9.432	22.812	14.921
14500.00	8193.75	1819.67	0.000	21.067	4-FFf	6.500	6.500	6.500	9.953	23.647	15.366

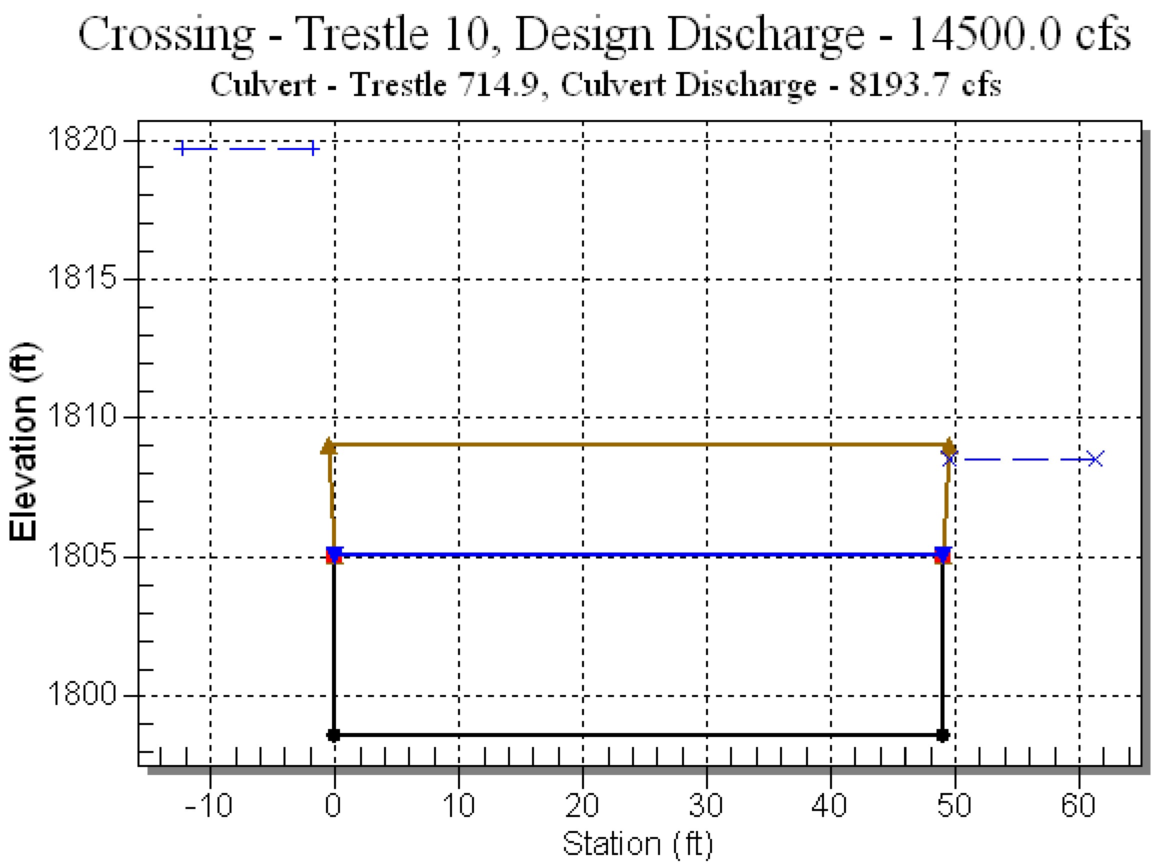
****

Inlet Elevation (invert): 1798.60 ft,   Outlet Elevation (invert): 1798.60 ft

Culvert Length: 49.00 ft,   Culvert Slope: 0.0000

****

Water Surface Profile Plot for Culvert: Trestle 714.9



Site Data - Trestle 714.9

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1798.60 ft

Outlet Station: 49.00 ft

Outlet Elevation: 1798.60 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 714.9

Barrel Shape: User Defined

Barrel Span: 55.00 ft

Barrel Rise: 6.50 ft

Barrel Material:

Barrel Manning's n: 0.0150 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 24 - Downstream Channel Rating Curve (Crossing: Trestle 10)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	1798.60	0.00	0.00	0.00	0.00
1450.00	1801.46	2.86	7.64	1.78	0.86
2900.00	1802.82	4.22	9.56	2.63	0.91
4350.00	1803.88	5.28	10.83	3.29	0.94
5800.00	1804.76	6.16	11.81	3.85	0.96
7250.00	1805.54	6.94	12.61	4.33	0.97
8700.00	1806.24	7.64	13.30	4.77	0.99
10150.00	1806.89	8.29	13.90	5.17	1.00
11600.00	1807.48	8.88	14.43	5.54	1.01
13050.00	1808.03	9.43	14.92	5.89	1.02
14500.00	1808.55	9.95	15.37	6.21	1.02

Tailwater Channel Data - Trestle 10

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 55.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0100

Channel Manning's n: 0.0350

Channel Invert Elevation: 1798.60 ft

Roadway Data for Crossing: Trestle 10

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 60.00 ft

Crest Elevation: 1809.00 ft

Roadway Surface: Gravel

Roadway Top Width: 50.00 ft

Table 25 - Summary of Culvert Flows at Crossing: Trestle 3

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 708.7 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
2066.03	0.00	0.00	0.00	1
2066.03	157.70	157.70	0.00	1
2066.03	315.40	315.40	0.00	1
2071.39	473.10	473.10	0.00	1
2073.78	630.80	630.80	0.00	1
2075.10	788.50	689.81	98.42	5
2075.70	946.20	705.90	240.14	4
2076.19	1103.90	716.36	387.45	4
2076.62	1261.60	725.13	536.42	4
2077.01	1419.30	732.65	686.31	3
2077.38	1577.00	739.72	837.26	4

Rating Curve Plot for Crossing: Trestle 3

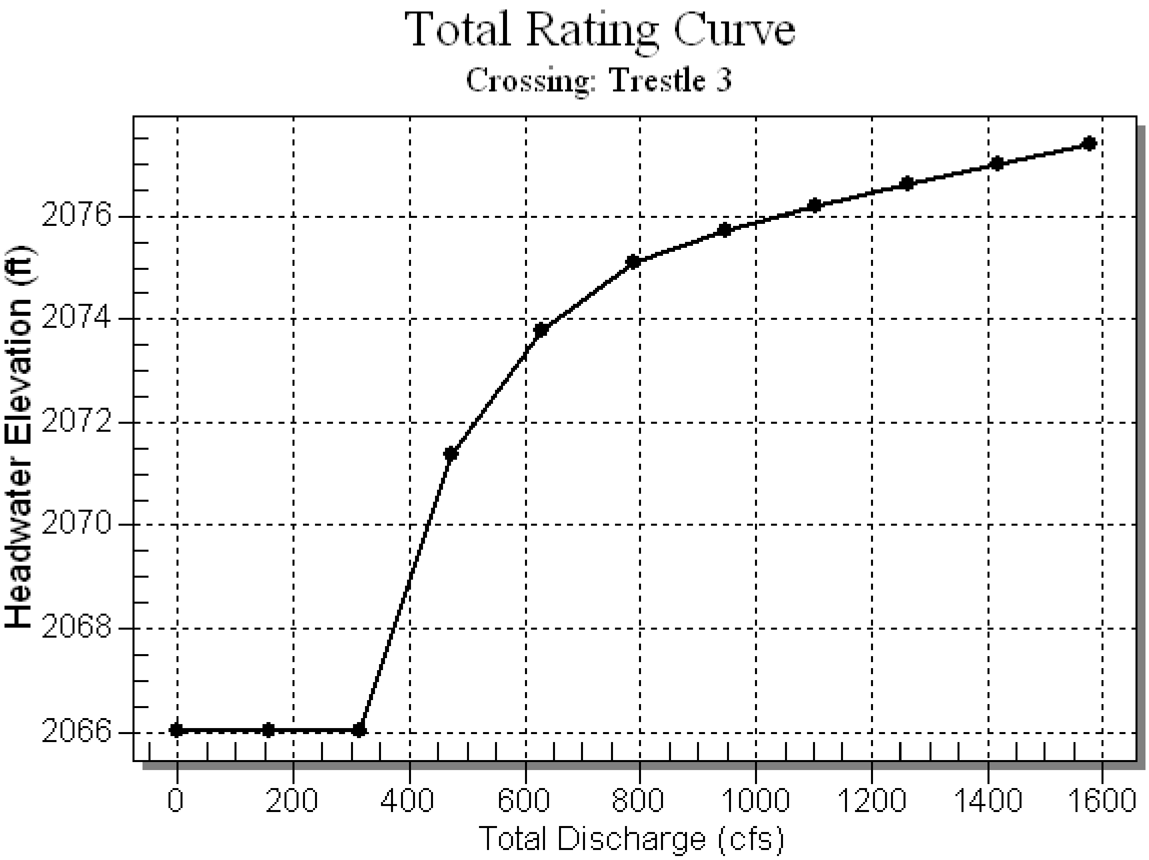


Table 26 - Culvert Summary Table: Trestle 708.7

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	2066.03	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
157.70	157.70	2066.03	0.000	0.000	1-S2n	1.155	1.577	1.273	1.624	8.850	4.739
315.40	315.40	2066.03	0.000	0.000	1-S2n	1.810	2.505	2.084	2.336	10.809	5.784
473.10	473.10	2071.39	0.000	5.365	6-FFc	2.365	3.000	3.000	2.868	11.264	6.475
630.80	630.80	2073.78	0.000	7.754	4-FFf	3.000	3.000	3.000	3.309	15.019	6.998
788.50	689.81	2075.10	0.000	9.066	4-FFf	3.000	3.000	3.000	3.689	16.424	7.432
946.20	705.90	2075.70	0.000	9.672	4-FFf	3.000	3.000	3.000	4.028	16.807	7.802
1103.90	716.36	2076.19	0.000	10.157	4-FFf	3.000	3.000	3.000	4.335	17.056	8.126
1261.60	725.13	2076.62	0.000	10.589	4-FFf	3.000	3.000	3.000	4.616	17.265	8.419
1419.30	732.65	2077.01	0.000	10.983	4-FFf	3.000	3.000	3.000	4.879	17.444	8.680
1577.00	739.72	2077.38	0.000	11.352	4-FFf	3.000	3.000	3.000	5.123	17.612	8.925

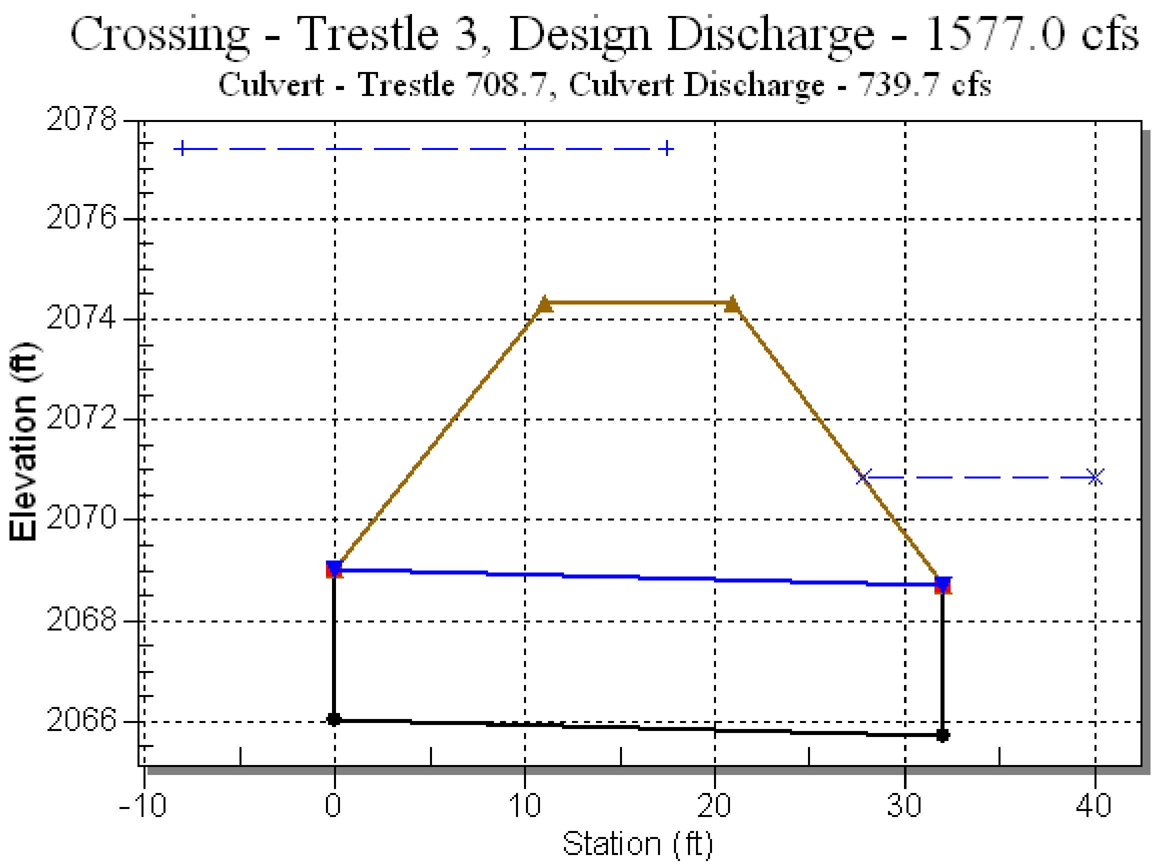
****

Inlet Elevation (invert): 2066.03 ft,   Outlet Elevation (invert): 2065.72 ft

Culvert Length: 32.00 ft,   Culvert Slope: 0.0097

****

Water Surface Profile Plot for Culvert: Trestle 708.7



Site Data - Trestle 708.7

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 2066.03 ft

Outlet Station: 32.00 ft

Outlet Elevation: 2065.72 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 708.7

Barrel Shape: User Defined

Barrel Span: 14.00 ft

Barrel Rise: 3.00 ft

Barrel Material:

Barrel Manning's n: 0.0150 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 27 - Downstream Channel Rating Curve (Crossing: Trestle 3)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	2065.72	0.00	0.00	0.00	0.00
157.70	2067.34	1.62	4.74	0.97	0.75
315.40	2068.06	2.34	5.78	1.40	0.79
473.10	2068.59	2.87	6.47	1.72	0.81
630.80	2069.03	3.31	7.00	1.98	0.83
788.50	2069.41	3.69	7.43	2.21	0.84
946.20	2069.75	4.03	7.80	2.41	0.85
1103.90	2070.05	4.33	8.13	2.60	0.86
1261.60	2070.34	4.62	8.42	2.77	0.86
1419.30	2070.60	4.88	8.68	2.92	0.87
1577.00	2070.84	5.12	8.92	3.07	0.88

Tailwater Channel Data - Trestle 3

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 14.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0096

Channel Manning's n: 0.0350

Channel Invert Elevation: 2065.72 ft

Roadway Data for Crossing: Trestle 3

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 50.00 ft

Crest Elevation: 2074.30 ft

Roadway Surface: Gravel

Roadway Top Width: 10.00 ft

Table 28 - Summary of Culvert Flows at Crossing: Trestle 8

Headwater Elevation (ft)	Total Discharge (cfs)	Trestle 711.9 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1901.22	0.00	0.00	0.00	1
1907.12	1616.40	1616.40	0.00	1
1910.96	3232.80	3232.80	0.00	1
1913.63	4849.20	4183.56	665.57	5
1915.93	6465.60	4754.26	1711.29	5
1918.11	8082.00	5130.69	2951.28	5
1920.07	9698.40	5449.67	4248.22	3
1921.89	11314.80	5732.12	5582.67	4
1923.60	12931.20	5988.56	6942.63	4
1925.22	14547.60	6224.53	8323.06	4
1926.77	16164.00	6444.76	9719.23	4

Rating Curve Plot for Crossing: Trestle 8

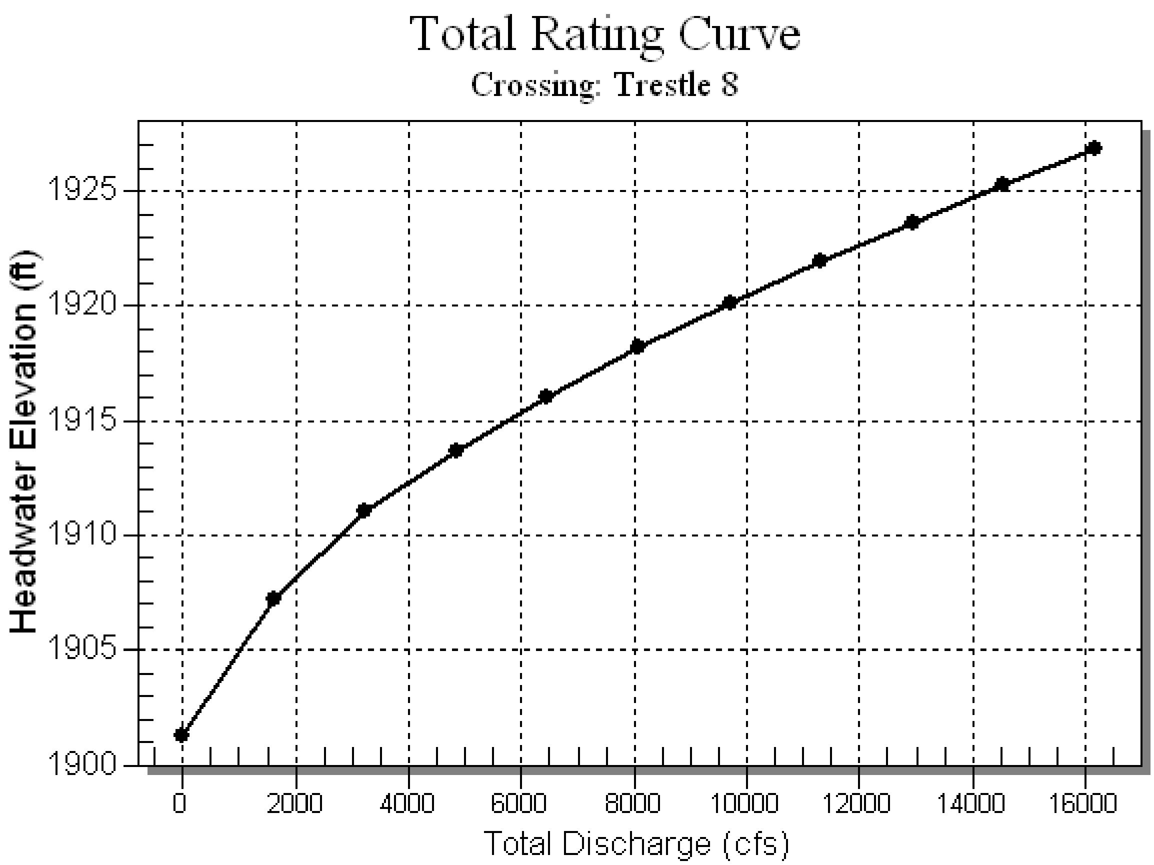


Table 29 - Culvert Summary Table: Trestle 711.9

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	1901.22	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
1616.40	1616.40	1907.12	0.000	5.900	2-M2c	3.968	3.699	3.699	3.202	10.923	10.558
3232.80	3232.80	1910.96	0.000	9.738	7-M2c	6.250	5.886	5.886	4.648	13.731	12.980
4849.20	4183.56	1913.63	0.000	12.411	6-FFc	6.250	6.250	6.250	5.741	16.734	14.573
6465.60	4754.26	1915.93	0.000	14.713	4-FFf	6.250	6.250	6.250	6.648	19.017	15.790
8082.00	5130.69	1918.11	0.000	16.888	4-FFf	6.250	6.250	6.250	7.435	20.523	16.791
9698.40	5449.67	1920.07	0.000	18.850	4-FFf	6.250	6.250	6.250	8.138	21.799	17.643
11314.80	5732.12	1921.89	0.000	20.667	4-FFf	6.250	6.250	6.250	8.776	22.928	18.391
12931.20	5988.56	1923.60	0.000	22.376	4-FFf	6.250	6.250	6.250	9.363	23.954	19.062
14547.60	6224.53	1925.22	0.000	23.998	4-FFf	6.250	6.250	6.250	9.910	24.898	19.666
16164.00	6444.76	1926.77	0.000	25.550	4-FFf	6.250	6.250	6.250	10.421	25.779	20.227

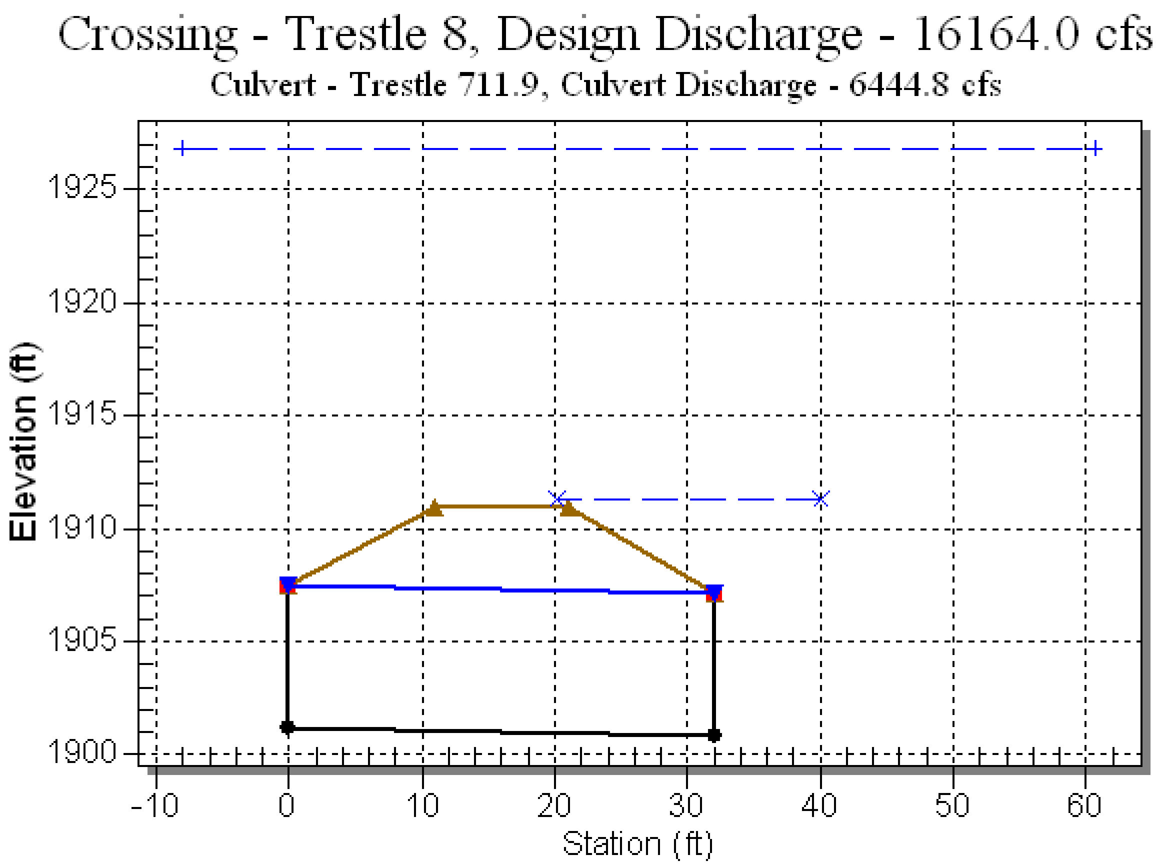
****

Inlet Elevation (invert): 1901.22 ft, Outlet Elevation (invert): 1900.85 ft

Culvert Length: 32.00 ft, Culvert Slope: 0.0116

****

Water Surface Profile Plot for Culvert: Trestle 711.9



Site Data - Trestle 711.9

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1901.22 ft

Outlet Station: 32.00 ft

Outlet Elevation: 1900.85 ft

Number of Barrels: 1

Culvert Data Summary - Trestle 711.9

Barrel Shape: User Defined

Barrel Span: 40.00 ft

Barrel Rise: 6.25 ft

Barrel Material:

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 1.4lf (bottom)

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 30 - Downstream Channel Rating Curve (Crossing: Trestle 8)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	1900.85	0.00	0.00	0.00	0.00
1616.40	1904.05	3.20	10.56	3.66	1.17
3232.80	1905.50	4.65	12.98	5.31	1.23
4849.20	1906.59	5.74	14.57	6.56	1.27
6465.60	1907.50	6.65	15.79	7.59	1.29
8082.00	1908.28	7.43	16.79	8.49	1.31
9698.40	1908.99	8.14	17.64	9.29	1.33
11314.80	1909.63	8.78	18.39	10.02	1.34
12931.20	1910.21	9.36	19.06	10.69	1.35
14547.60	1910.76	9.91	19.67	11.32	1.36
16164.00	1911.27	10.42	20.23	11.90	1.37

Tailwater Channel Data - Trestle 8

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 35.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0183

Channel Manning's n: 0.0350

Channel Invert Elevation: 1900.85 ft

Roadway Data for Crossing: Trestle 8

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 50.00 ft

Crest Elevation: 1910.97 ft

Roadway Surface: Gravel

Roadway Top Width: 10.00 ft

Estimate Potential Scour at SunCatcher™ foundation

SES Solar One Date: 11/07/08 By: cg

Initial Drainage Report Date Checked: By:

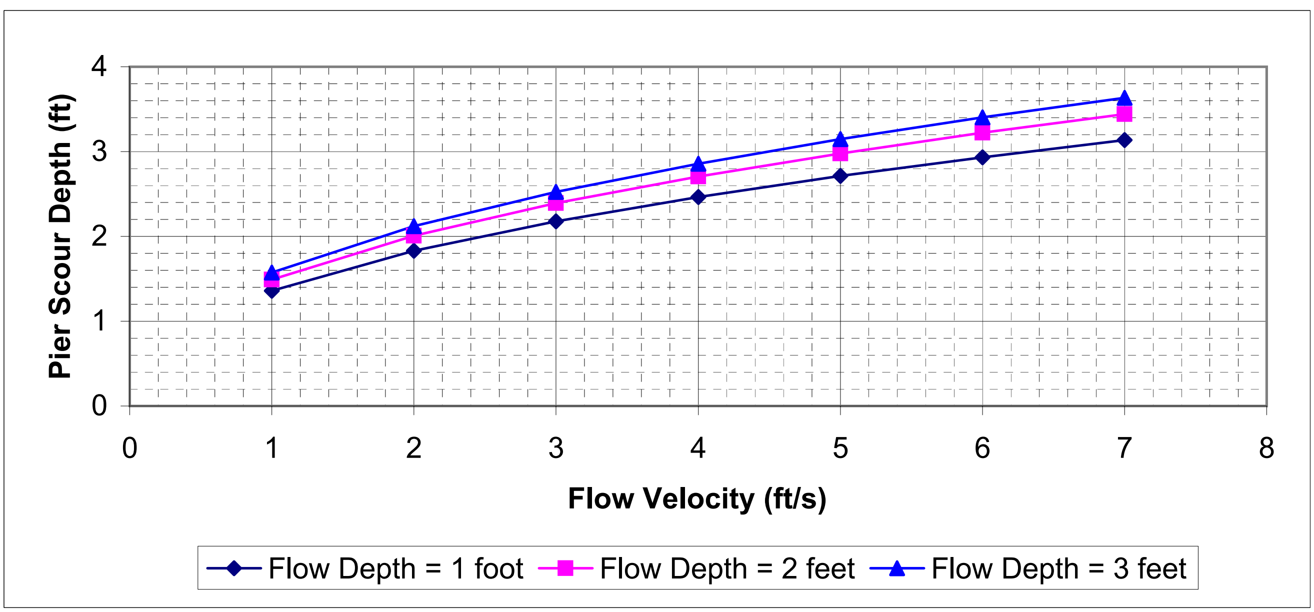
Stantec Proj. No. 2000024301 Date Revised: By:

Estimate Potential Scour at SunCatcher ™ foundation

CSU Equation for pier scour

Location / Reach		d (ft)	d (m)	y1 (ft)	y1 (m)	b (m)	Fr	V (ft/s)	V (m/s)	y (m)	K1	K2	K3	K4
1		1.36	0.41	1.00	0.30	0.46	0.18	1.00	0.30	0.3	1	1	1.1	1
2		1.83	0.56	1.00	0.30	0.46	0.35	2.00	0.61	0.3	1	1	1.1	1
3		2.18	0.66	1.00	0.30	0.46	0.53	3.00	0.91	0.3	1	1	1.1	1
4		2.46	0.75	1.00	0.30	0.46	0.71	4.00	1.22	0.3	1	1	1.1	1
5		2.71	0.83	1.00	0.30	0.46	0.88	5.00	1.52	0.3	1	1	1.1	1
6		2.93	0.89	1.00	0.30	0.46	1.06	6.00	1.83	0.3	1	1	1.1	1
7		3.13	0.96	1.00	0.30	0.46	1.23	7.00	2.13	0.3	1	1	1.1	1
8		1.49	0.45	2.00	0.61	0.46	0.12	1.00	0.30	0.61	1	1	1.1	1
9		2.01	0.61	2.00	0.61	0.46	0.25	2.00	0.61	0.61	1	1	1.1	1
10		2.39	0.73	2.00	0.61	0.46	0.37	3.00	0.91	0.61	1	1	1.1	1
11		2.71	0.82	2.00	0.61	0.46	0.50	4.00	1.22	0.61	1	1	1.1	1
12		2.98	0.91	2.00	0.61	0.46	0.62	5.00	1.52	0.61	1	1	1.1	1
13		3.22	0.98	2.00	0.61	0.46	0.75	6.00	1.83	0.61	1	1	1.1	1
14		3.44	1.05	2.00	0.61	0.46	0.87	7.00	2.13	0.61	1	1	1.1	1
15		1.57	0.48	3.00	0.91	0.46	0.10	1.00	0.30	0.91	1	1	1.1	1
16		2.12	0.65	3.00	0.91	0.46	0.20	2.00	0.61	0.91	1	1	1.1	1
17		2.53	0.77	3.00	0.91	0.46	0.31	3.00	0.91	0.91	1	1	1.1	1
18		2.86	0.87	3.00	0.91	0.46	0.41	4.00	1.22	0.91	1	1	1.1	1
19		3.15	0.96	3.00	0.91	0.46	0.51	5.00	1.52	0.91	1	1	1.1	1
20		3.40	1.04	3.00	0.91	0.46	0.61	6.00	1.83	0.91	1	1	1.1	1
21		3.64	1.11	3.00	0.91	0.46	0.71	7.00	2.13	0.91	1	1	1.1	1

assume round peirs, no skew angle, clear water scour and no correction for armoring



Estimate Potential Scour at SunCatcher ™ foundation

CSU Equation for piers

$$d / y_1 = 2.0\ K_1\ K_2\ K_3\ K_4\ (b/y_1)^{0.65}\ Fr^{0.43} \qquad (12)$$

where: d = maximum depth of scour below local streambed elevation (m)
y_1 = flow depth directly upstream of the pier (m)
b = pier width (m) (Figure H-4)
Fr = Froude number: $V / (g\ y)^{0.5}$ (dimensionless)

Where: V = velocity of flow approaching the abutment (m/s)
g = acceleration due to gravity (9.81 m/s^2)
y = flow depth at pier (m)

K_1 through K_4 are as defined below

Note that for the special case of round-nosed piers aligned with the flow:

$d \leq 2.4$ times the pier width for $Fr \leq 0.8$
$d \leq 3.0$ times the pier width for $Fr > 0.8$

Estimate Potential Scour at SunCatcher ™ foundation

K_1 = Correction factor for pier nose shape:

For approach flow angle of attack > 5 degrees, $K_1 = 1.0$ (Figure H-4)
For approach flow angle of attack ≤ 5 degrees:

square nose	$K_1 = 1.1$
round nose	$K_1 = 1.0$
circular cylinder	$K_1 = 1.0$
group of cylinders	$K_1 = 1.0$
sharp nose	$K_1 = 0.9$

K_2 = Correction factor for angle of attack of flow

$$K_2 = (\text{Cos } \theta + L/b \text{ Sin } \theta)^{0.65}$$

where: K_2 = correction factor from Table H-3
L = length of the pier which is being directly subjected to impinging flow at the angle of attack (m) (Figure H-4)
θ = flow angle of attack to pier (in degrees)
Maximum L/b = 12

Table H-3. K_2 vs. L/b

θ	L/b = 4	L/b = 8	L/b = 12
0	1	1	1
15	1.5	2	2.5
30	2	2.8	3.5
45	2.3	3.3	4.3
90	2.5	3.9	5

K_3 = Correction factor for bed conditions, based on dune height, where dunes are repeating hills formed from moving sand across the channel bed.

Table H-4. K_3 based on bed conditions

Bed Conditions	Dune height (m)	K_3
clear water scour	N/A	1.1
plane bed & antidune flow	N/A	1.1
small dunes	0.6 to 3	1.1
medium dunes	3 to 9	1.1 to 1.2
large dunes	9≥	1.3

For gravel-bed rivers, the recommended value of K_3 is 1.1

K_4 = Correction factor for armoring of bed material (scour decreases with armoring)

K_4 range = 0.7 to 1.0

$K_4 = 1.0$, for $D_{50} < 0.06$ m, or for $V_r > 1.0$

$K_4 = [\,1 - 0.89\,(1 - V_r)^2\,]^{0.5}$, for $D_{50} \geq 0.06$ m,

where:

$V_r = (V - V_i)/\,(V_{c90} - V_i)$
$V_i = 0.645\,(D_{50}/b)^{0.053}\,V_{c50}$
$V_c = 6.19\,y_1^{1/6}\,D_c^{1/3}$

and:

V = approach flow velocity (m/s)
V_r = velocity ratio
V_i = approach velocity when particles at a pier begin to move (m/s)
V_{c90} = critical velocity for D90 bed material size (m/s)
V_{c50} = critical velocity for D50 bed material size (m/s)
g = acceleration due to gravity (9.81 m/s^2)
D_c = critical particle size for the critical velocity, V_c (m)
y_1 = flow depth directly upstream of the pier (m)